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Concern of the United States with Tropical Diseases*

F. W. O'CONNOR, M.R.C.S.
Department of Medicine, Presbyterian Hospital, Columbia University, New York, N. Y.

OUR responsibility regarding tropical diseases requires consideration of various factors. Of primary interest to us are the diseases of the mainland, but we must also consider those of our various dependencies and protectorates, and of the army and the navy whose members may serve in any part of the world. We have, furthermore, a measure of responsibility for the many commercial enterprises having branches in foreign countries and for the engineering, scientific, and missionary organizations whose work is largely carried on in foreign fields. Viewing the matter from this broad standpoint it will be readily appreciated that our concern with tropical and imported diseases is national.

Most of us know that the diseases referred to have played an important part in the development of this country from its earliest days, and it is therefore desirable to review this aspect of the subject. Many of these diseases are still of serious importance to us, and we have to consider their possible influence on the future of the people as well as our ability to control them.

According to the earliest records the first white settlers found this a healthy country, and there is no suggestion that they were affected by tropical diseases on their arrival. This happy state, however, was of short duration, and we learn of malaria having been introduced by the Spaniards at an early date. With the establishment of the slave trade the African brought not only this infection but many others. Those infections which required no intermediary host for transmission, such as hookworm, ascaris, etc., as well as those which found a suitable insect host, for instance the virus of yellow fever, the plasmodia of malaria and *Wuchereria bancrofti*, established themselves on the mainland. On the other hand the trypanosoma, schistosoma, loa loa, as well as other less important parasites, in the absence of a suitable host, could not spread in North America. *Malaria* spread rapidly and Rush tells us that remittent and intermittent fevers were responsible for a high mortality and much invalidism. In some localities he found that scarcely a family, and in some families scarcely a

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member, escaped the disease. Later, in his lecture courses Hosack considered malaria so important that he devoted 3 lectures to this subject alone. La Roche in 1855 stressed the prevalence of the infection on the outskirts of developing settlements. During the Civil War Woodward states that there were 1,213,685 cases of malaria with 12,199 deaths among the Northern troops, and adds that it was even more prevalent among the Confederates. Vaughan, in writing about his experiences in 1865 says, "Every man, woman and child in southern Illinois, at least within my range, shook with ague every other day"; and later, "That summer I saw enough of a people held in bondage with malaria to make a lasting impression on a boy's mind."

Hirsh in 1883 found that the largest foci of infection in the United States were on the shores of the Great Lakes and particularly in the southern part of Michigan. He reports pernicious attacks of the disease at Detroit and Plymouth, and as far north as Hamilton and Kingston, in Canada. It was then endemic in the northeastern part of New York, but he adds, "It is mostly along the banks of the Hudson and on a narrow strip of coast that the disease is endemic in this state." According to Ferrell, in 1881 the death rate from malaria amounted to 4.2 per 10,000 of population, and only in 1890 did the mortality fall below 1 per 10,000 in New York State. Not until 1898 was the mortality less than 1 per 10,000 in New Jersey; and in Indiana the rate was 1 per 10,000 prior to 1900.

Yellow fever appeared first in Boston in 1692, introduced from the West Indies. In 1699, only 17 years after the founding of the city, it spread havoc in Philadelphia. From that time until 1853 in cities ranging from Providence, Rhode Island, to New Orleans, La., epidemics of varying severity caused high mortality. Subsequently smaller outbreaks occurred at Decatur, Ala., and elsewhere, but with the exception of a few laboratory infections the disease has not appeared in this country within recent years. Philadelphia especially suffered during the epidemics. From Philadelphia physicians of that time we have excellent accounts of the disease as well as references to the outbreaks of malaria and dysentery which usually preceded the epidemics.

Dysentery is frequently described by the early American writers. Both febrile (bacillary) and afebrile (probably amebic) are mentioned. Woodward's figures for acute and chronic diarrhea and dysentery for the Civil War period are 1,739,135 cases with 44,558 deaths. This writer gives good accounts of hepatic abscess, which, single or multiple, was found in 1 out of 25 autopsies of diarrheal or dysenteric cases. This disease was not limited to armies, for Vaughan tells us that "the most fatal childhood disease is designated in the family records as 'bloody flux' . . . It is a bacterial dysentery and in some generations has killed half of the family, mostly before they reached 5 years of age." Large or small outbreaks of bacillary dysentery have occurred in different states since the time Vaughan refers to and within the last 6 weeks we have heard of its presence in Jersey City, New York, and Boston.

Cholera—Three severe visitations of cholera have reached the United States. In 1832 the infection having entered through Canada spread to Detroit, New York, Pennsylvania, Maryland, Virginia, and Kentucky and along the Ohio River to Indiana and Illinois. In October of that year it was severe in New Orleans whence it spread along the Mississippi. In 1848 cholera started in this country at New York and New Orleans. From the latter city it reached Memphis and Texas. In 1849 it spread over the whole of the country

east of the Rocky Mountains and in 1850 it was widespread in the far west and in the basins of the Mississippi and Ohio Rivers. Cases of cholera were present in certain parts of the country until 1854. The last serious epidemic of this disease arrived from Halifax in 1866. It appeared in New York and New Orleans and spread throughout the country with the exception of the states along the Atlantic seaboard.

Dengue has appeared frequently in this country and is endemic in certain areas of the South. The first epidemic of which we have a fairly clear account was described by Rush in 1780. There was a widespread epidemic in the South in 1850 and another in 1924 which spread from Texas to North Carolina. In the last available *Public Health Reports* cases of dengue are reported for 1931 and 1932, and only a month ago an outbreak of some local importance was reported in Miami, Fla.

Relapsing fever was brought to this country at an early date by immigrants from Europe. According to Craig it was first recognized in the United States in 1846. Parry mentions the disease as being present in New York and Philadelphia, and describes an outbreak in the latter in the winter of 1869–1870, when he had 37 cases in his own practice. The disease has since been reported in different parts of the United States and Canada. Most of the earliest outbreaks were probably transmitted by lice. Recently the disease has been found to be endemic in Texas and California, where the transmitting agent is believed to be a tick, belonging to the genus *Ornithodorus*.

Leprosy was introduced both from Europe and from Africa. It was not uncommon in the Mississippi Valley 150 years ago (Denny). In 1872 it was found to be spreading among persons of French descent in the South, and an endemic area exists on the coast of Texas northeast of Galveston.

Undulant fever was first recognized by Musser and Sailer in 1898, although in all probability it had been here for a long time. Those who have worked on this disease since, feel that possibly the epidemic of typhomalaria in 1880, as described by Hoff, was undulant fever. Craig saw many cases in the army in 1904. In 1918 it was found that *Brucella abortus* was frequently present in cows' milk in the San Francisco region. In 1922 there was a severe epidemic of this disease in Phoenix, Ariz. In the last available *Public Health Reports* 1,578 cases were reported for 1931 and 1,502 for 1932.

Doubtless many of the other tropical diseases with which we are familiar existed from the early settlement of the country but they were not understood. From historical record therefore we learn that tropical diseases were a serious menace to the pioneers of this country during its early development, and that most of these diseases were imported. Most important among the lessons of this experience is the fact that with economic improvement in a people's condition and with the increasingly efficient public health service which such improvement renders possible, most of the diseases, called tropical, may be kept within the limits of their more usual climatic zones.

While we may reasonably hope that epidemics of the more destructive tropical diseases, such as cholera, yellow fever, and plague, are unlikely to afflict us in the future, there are abundant reasons why we should take thought of the many others which still exist in this country.

Strangely enough, at the present time there is a greater variety of so-called tropical diseases in the United States, and a higher incidence of some of them, than is found in the European countries where the same diseases are indigenous. The most important contributing factor is the vastness of this

country, which includes a sub-arctic, a temperate, and a sub-tropical climate. The varying topography of the different states also exercises an influence. Furthermore there are no sea barriers between the tropics and the temperate zone as there are in Europe. Such barriers have undoubtedly prevented the spread of certain infections there, whereas we have none between Mexico, Central America, the southern states, and the remainder of North America. We have also a constant influx of our own citizens from Puerto Rico on the east coast and from the Philippines on the West Coast, in addition to which there is a large immigrant population from the Caribbean Islands, Central and South America, which settles primarily in the large cities of the Atlantic seaboard bringing their parasites with them. I know nothing of the incidence of animal parasites among the resident population of Orientals on the west coast but, judging from experience in New York with Chinese clinic patients, the incidence of hookworm, ascaris, whip worm, and the Oriental liver flukes must be fairly high. Due to our extensive coastline, with some ports in the sub-tropical zone, many persons from the nearby tropics come to this country on business or for study or medical consultation. As a result of these different factors we find in the large cities a variety of parasitic and tropical conditions which is unique for a more or less temperate climate. While it may be said that within this country everything possible is being done to combat the more serious tropical diseases, we should consider whether we are not neglecting the dangers of some imported infections. A fair percentage of the immigrants or citizens who come to our large ports eventually settle in rural districts where sanitation is as primitive as in their country of origin. One wonders if it would not be well to include in the medical examination which is given to immigrant aliens on entry, at least one stool and blood examination, to obviate as far as possible the likelihood of their supplementing the parasitic conditions already found in the United States and Canada which it is our object to suppress.

While it is impossible to classify these infections according to their geographical limits in the states, it is possible to place them in categories according to their prevalence. Thus undulant fever, the intestinal protozoa, trichiniasis, *T. echinococcus, T. saginata, Enterobius vermicularis,* and some skin infections, and snake bite (except in Maine), may be found fairly frequently, or may occur in sporadic instances in most states of the Union. On the other hand, malaria, blackwater fever, hookworm, pellagra, ascaris infection, leprosy, relapsing fever, dengue, granuloma inguinale, climatic bubo, endemic typhus or Brill's disease, hymenolepsis nana infection, creeping eruption, filariasis (limited to Charleston, S. C.), and rarer conditions such as madura foot and ainhum, are more prevalent in, although not strictly limited to the southern states.

Diphyllobothrium latum infection has of recent years become increasingly common in the northern states. Many of the fish in the Great Lakes district are infected, and Magath has given us very valuable information on the subject. Five years ago *T. saginata* was the most commonly encountered tapeworm at the Presbyterian Hospital, New York, whereas now it is outnumbered by the fish tapeworm. It is of interest to note that in our experience most of these infections occur in the female members of orthodox Jewish families. These people are the largest consumers of the fish which is shipped from the Great Lakes district.

While the majority of these conditions considered separately are not definitely of public health importance, collectively they are responsible for a

considerable degree of invalidism. Of particular importance, however, we may consider malaria, hookworm infection, pellagra, amebiasis, leprosy, and undulant fever, while relapsing fever and ascaris infection merit our attention as being potential menaces in certain areas.

Malaria continues to be a serious public health problem. The economic loss resulting from its effects is an important factor. Children are retarded both in their mental and physical development. Ferrell has shown that in 1919, 1920, and 1921, 520 counties in 16 states reported a mortality rate from malaria of more than 1 per 10,000 inhabitants. The percentage of counties in the respective states having a significant problem varied from 5 per cent in Kentucky to 90 in Mississippi, and the proportion of the states' population included in such counties ranged from 1 per cent in California to 92 in Mississippi. In Arkansas, Florida, Louisiana, and Mississippi, approximately three-fourths of the population live in counties having a malaria problem. In 1932 there were 68,613 reported cases of malaria from 37 states, with 2,625 deaths.

Considerable research has been devoted to the prevention of this infection. Where drainage is possible it is most efficacious. Filling in, as employed in land reclamation, has done much to limit its prevalence. Certain species of larvacidal fish have been found useful in some districts. Oiling of breeding waters has its advocates, and various chemicals have been used with some success. Of recent years a definite advance in the prevention of malaria has been made by treating the breeding places of anophelines with Paris green. In smaller collections of water the chemical may be disseminated by hand; in larger areas it is distributed by airplane. In many places where other measures are not practicable the mosquito proofing of houses has proved efficacious. In all malarial areas the people should be advised when possible to use mosquito nets. Sometimes a combination of several of the methods mentioned may be necessary. The use of quinine as a prophylactic has been shown to be useless, but the sterilization of carriers of gametocytes with plasmochin may help to prevent infection of their fellows.

Medical officers of health should have special knowledge of the prevention of malaria along the lines referred to, and this necessitates a preliminary knowledge of the differentiation of mosquito genera and the morphology of eggs, larvae and adults of the anophelines which are the carriers of the plasmodia. It is important to recognize the kinds of water in which such anophelines breed. This varies in different localities. Some species breed in stagnant waters; others by the side of streams; some require the freshest water; others tolerate a fair degree of salinity.

Hookworm is a disease which has only been understood within comparatively recent times. In heavily infected persons it causes severe anemia and debility. The effects on children of school age are very apparent, for it produces stunting of growth and retardation of mental development. Valuable work has been done in this country on worm and egg counts, from which we have an index of the number of worms necessary to cause hookworm disease. However, it must be remembered that when associated with other infections such as tuberculosis, malaria, pellagra or amebiasis, much smaller numbers of hookworms may play a serious rôle in aggravating the severity of symptoms or retarding convalescence after any intercurrent sickness. Considerable progress has been made in combating the disease by means of education, sanitation, and by massed treatment. Jacocks describes hookworm surveys in

11 southern states in 1910–1915 and resurveys of the same areas in 1920–1923 following an active treatment campaign. In the original survey he found 51.1 per cent of the rural school children infected, whereas in the second, he found only 27.8 per cent, a reduction of 49.5 per cent. He points out that the reduction of the severity of the disease was probably much greater even than the figures would indicate. In Mississippi, Keller, Leathers, and Ricks, by massed treatment have reduced the infection 62 per cent in the period from 1910 to 1933. From these brilliant results states and counties with a hookworm problem have abundant assurance that if they carry out control measures on the lines that have been proved to be successful they may rid their population of this incapacitating infection, or at least reduce its incidence to that of negligible importance.

Pellagra—Since many cases of the food deficiency disease, pellagra, remain undiagnosed, it is probable that during any year the figures given for this disease are well below the fact, although the reported figures are sufficiently serious. It causes debility, anemia, gastrointestinal disturbances and insanity, and has a high mortality. Pellagra is so often associated with hookworm infection that the gastrointestinal symptoms are frequently attributed to the latter. This is certainly not the case since pellagra occurs with the same symptomatology in countries where hookworm does not exist, but, nevertheless, as a contributing factor hookworm infestation must be considered. It is significant that pellagra is especially prevalent and severe in those countries where there is a high incidence of hookworm, namely, in Egypt, and in our own southern states. The disease becomes more prevalent during periods of special privation. Goldberger's inquiries concerning pellagra in Tennessee, Arkansas, Mississippi, and Louisiana show that in 1924 there were 20,000 cases with 1,026 deaths, whereas in 1927, after the flood and its attendant want and privation, he estimated that there were 50,000 cases with 2,500 deaths. According to the last available *Public Health Reports* there were 15,643 cases in 19 states during 1932. The control of this scourge is largely dependent upon improvement in the economic condition of the people and upon their education along dietary lines.

Plague—With the exception of small outbreaks in Louisiana and California, plague has not assumed dangerous proportions in this country. The infection is indigenous among desert rodents in some parts of California, Montana, and Nevada, and cases of rodent plague are sometimes found about ports. From experience in India and other countries it is known that an increase in the incidence of rodent plague usually precedes the appearance of the first human cases; therefore, it is only by constant observation of rodent plague incidence that the disease can be prevented from appearing in epidemic form among human beings. That we have been protected against such visitations in this country is entirely due to the vigilance and efficiency of the health authorities.

Amebiasis—It is now generally recognized that amebiasis with its destructive complications is not limited to the tropics. The usual methods of transmission by flies and water from contaminated streams and wells are such that man probably gets only a small infection at one time. He is thus able to build up some immunity so that with the onset of the disease the symptoms are usually insidious or mild. For this reason also the disease has been known as an endemic one. However the recent epidemic in Chicago indicates that we must modify our original conception of the transmission of this disease, and that in this, as in typhoid and bacillary dysentery, the very effort toward the

better sanitary protection of mankind may not only bring new evils in its train, but may also upset the usual biological balance between parasite and man. Epidemiological evidence suggested, and the sanitary engineers have demonstrated, that this epidemic was caused by the massed contamination of potable water with sewage containing *E. histolytica* cysts, mainly in 2 hotels. As a consequence, many persons with no acquired immunity became heavily infected and probably reinfected within a short space of time, with the most serious consequences. It is at least probable that the contaminating agency was associated with infringements of established rules and laws regarding cross-connections. In the past we have had outbreaks of bacillary dysentery due to contamination of water resulting from cross-connections and faulty plumbing, and since we now have evidence of another disease being transmitted in the same way, it is most important that inspection of our hotel and residence water systems should be carefully and systematically undertaken by properly qualified sanitary inspectors. The Chicago epidemic of 1933 is a warning to all municipalities and health officers that under conditions of " guest strain " during conferences, expositions, pilgrimages, etc., another such epidemic might easily occur in any large city. *Entameba histolytica* cysts exist in 5 to 10 per cent of the population. Each infected individual is in danger, should his physiological balance break down, and he is an especial menace to his fellows under conditions such as existed in Chicago. Health authorities should be alert to the significance of this infection, especially when it is known that several members of a family or small groups of persons in limited localities are infected. The Chicago epidemic also showed the limitations of physicians in recognizing the condition.

From personal experience it is also clear that the clinical knowledge of physicians is equally limited concerning other grave diseases, which though more common in the tropics are fairly prevalent among us. Therefore, while it does not seem indicated to add to the already crowded curriculum of the medical student, he should be advised to have a reading knowledge of most tropical diseases, and more emphasis should be given in his medical course to malaria, hookworm, amebiasis, and undulant fever in their clinical and laboratory aspects. This is even more necessary for the medical student of the South.

For physicians desirous of becoming medical officers of health much more knowledge is required in this branch of medicine, especially regarding insect-borne diseases and the large group disseminated by fecal contamination. With regard to the former he should not only be able to recognize the insects themselves but should understand the bionomics, the methods by which they become infected from man, and the duration and nature of the development of parasites within them under varying climatic conditions. For those conditions transmitted through feces further knowledge is necessary, such as the conditions under which embryos develop inside the egg, whether they remain in the egg, or, if they hatch, to what extent the surrounding soil may become contaminated, the methods of infection of man for each parasite, the conditions by which flies act as porters of parasites, and the various ways by which water may be contaminated in wells, streams, and from reservoirs to water mains in buildings.

A knowledge of general measures known to be effective in the prevention of parasitic diseases transmitted by fecal contamination is also of importance. *Enterobius vermicularis* or pin-worm, ascaris, and the tapeworm, *Hymenolepis nana,* are directly trans-

mitted from material contaminated with feces by the fingers to the mouth. Hookworm larvae hatching from the egg on the ground enter the skin of the feet, hands or buttocks when in contact with them. The intestinal protozoa are transmitted by flies or by the water of wells or streams which have been contaminated by feces. The essential points in the prevention of all these infections is the education, especially of children in schools, to the dangers of such methods of infection, and of the vital necessity of personal cleanliness following defecation and the proper disposal of excreta within the limits of economic ability. Regarding towns and cities, the sanitary inspection of reservoirs and other water supplies at their source is not enough; a rigid inspection all the way from the source to the consumer is most important.

Leprosy is a public health problem in every country where it occurs. It was probably more prevalent in this country formerly than it is at present, but even now as the official figures show it is fairly common in the southern states. Happily, owing to the more humane method of caring for lepers, there is less tendency on the part of these unfortunates to try to hide their condition, and the danger of spreading this disease is proportionately limited. In the South the lepers are willing to avail themselves of the help offered them at the Federal Leper Colony in Louisiana. The concern of the United States with leprosy is of great importance in her colonies. The institutions for lepers in this country, in the Philippines, in Hawaii, and in Puerto Rico, and the Leonard Wood Memorial have earned a world-wide reputation for their work on the control and treatment of this disease.

Experience in our clinic suggests that there is a high incidence of infestation with the round worm, *Ascaris lumbricoides*, in this country. It is therefore interesting to learn from Cort and Otto that no endemic centers of this infestation of public health importance are reported from the northern and western parts of the country. The real problem is among the indigenous population of the Appalachian Mountains and the foothills running south, east, and west from this range, especially in Kentucky where the incidence is highest. Outside the mountain area important foci were found in Columbus County, N. C., in south central Louisiana, and in the city of Tampa, Fla. At the last the incidence is highest among the Cubans and their American born children. It is interesting to note in this connection that Boeck and Stiles found 21.9 per cent of 196 newly arrived immigrants, mainly from southern Europe, infested with ascaris, and that Cort reported 2.5 per cent as positives in 507 Japanese laborers in the delta region of central California. In New York we have found several ascaris families among missionaries recently returned to this country.

Ascaris is notorious owing to the frequency of serious accidents due to its wanderings from its usual habitat, the small intestine of man, into various parts of the body, and to the obstructions which it may cause through numbers. Moreover it is commonly associated with a variety of gastrointestinal and nervous symptoms, while mental phenomena may sometimes occur. In children with heavy infestations mental and physical development may be retarded, and, following early after infestation, during the wanderings of the embryo through the lungs, symptoms varying from bronchitis to pneumonia may develop.

Infestation is direct by mouth owing to ingestion of ova containing embryos which have matured on the ground where feces have been deposited in damp, dark, and warm places. It is therefore most prevalent in sections where sanitation is primitive or absent. In such places children are liable to

defecate in the region of the doorway or porch. Children show a higher incidence than adults. Frequently whole families are infested and are known as ascaris families. They are a particular menace, and act as distributing foci to neighboring families and at such rural schools as have no sanitary facilities. Prevention of this infestation depends upon the installation of suitable privies, and the education of the people regarding ascaris, especially through the children at schools which are situated in areas of high incidence. Special attention should be paid to the treatment of ascaris families to prevent dissemination.

From clinical and pathological observations in New York it is clear that *T. echinococcus* or hydatid infection and trichiniasis are by no means uncommon in some parts of this country, but we neither have records of their incidence nor do we know how much of these infections are imported. It would be both important and of general interest to have information on these matters.

Tularemia and Rocky Mountain spotted fever have found their way into the textbooks on tropical medicine without reason. Psittacosis has caused some interest of late, and has given us some reason for uneasiness. Happily the response to the need for research and prompt measures of prevention with education of the public have done much to prevent the spread of this disease.

The scientific contributions of our forebears and contemporaries give some indication of the importance of tropical disease to this continent. Significant as have been discoveries in medicine in other fields, in none of them has the output been so large on the one hand and so beneficial to all peoples on the other. The record is a splendid one and would provide abundant material for a volume on the history of tropical medicine in North America. On such an occasion as this, only mention of the most outstanding achievement is possible, such as the Army Commission headed by Reed on the transmission of yellow fever, Gorgas's control of yellow fever in Cuba, and of both malaria and yellow fever in Panama, making possible the construction of the Panama Canal, Ashford's investigations on hookworm, Goldberger's work on the etiology and prevention of pellagra, a succession of brilliant contributions on amebiasis by Leidy, Walker, and Sellards, Musgrave and Clegg. Siler's work on the transmission of dengue, Vedder's on emetine and beri-beri, McCoy's on leprosy, and of McCoy and Francis on tularemia, and the many outstanding contributions by officers of the U. S. Public Health Service on undulant fever, leprosy, and pellagra. Much of the work on the culture of parasites originated in this country. Novy was pioneer in the culture of the leishmania, Bass was the first to culture the malaria parasite, and Boeck the first able to cultivate successfully the parasitic amebae of man. Noguchi's work on the leishmania, the spirochetes, and Verruga peruviana was not the least of that scientist's contributions. Flexner's contribution on bacillary dysentery, Brill's on endemic typhus, and that of Louise Pierce on tryparsamide are also outstanding. The manner in which the Rockefeller Foundation blazed the trail in the control of hookworm, malaria, and yellow fever will make an epic in medical history. The memory of many other discoveries too numerous to mention, though of great importance, will endure. Such a record fills us with admiration but it gives us no right to be content.

Unfortunately, time will not permit the discussion of many unmentioned phases in the field of tropical medicine, but I hope that I have shown that as tropical disease was of vital concern to the pioneers of this country, so now there are many reasons why we should be on our guard, due to the greater

proximity of the tropics resulting from the more rapid modern transportation by ships of the sea and air. At present there is no cause for alarm regarding the spread of these diseases, although we may well be warned by the recent Chicago outbreak of dysentery. Just as we have conquered some epidemic diseases, such as cholera and yellow fever, and have reduced the range and prevalence of others, such as malaria and hookworm, so in the future we may hope that serious tropical disease may become less of a public health problem, while those who follow us may see some of these diseases banished from the land as we have seen yellow fever disappear from the member nations of this Association. This optimistic view presupposes that there will be no relaxation of vigilance or effort on the part of physicians and sanitarians, both in the research they may undertake and perhaps, most important of all, in the education of the public in the special health problems of tropical diseases.

Physical Examinations of Young Workers in Belgium

PHYSICAL examination of industrial workers under 18 in Belgium is the subject of a recent official report. Such examinations, introduced by a decree of 1920, are given at the time the young worker is admitted to work, and thereafter annually, and if the physician finds that the young worker's health is unsatisfactory, more frequently.

The employers are required by law to coöperate in this work; they must keep a register of all workers under 18, report to the physicians the names of new workers and of those who are frequently absent by reason of illness, and follow the recommendations made by the physicians with regard to workers whose health is unsatisfactory.

The examinations are performed either by medical inspectors employed by the government, or by private physicians paid by the employers and supervised by the medical inspectors. The results of the examinations are noted on individual cards, which are kept either by the physician in his office or at the establishment. The information is not accessible even to the employer.

The young worker and his parents are informed about any condition that needs correction. No treatment is given by the examining physician, but the boy or girl is referred to the appropriate social welfare agency, where the necessary medical attention is given. The examining physicians with the aid of nurses and personnel workers are active in finding suitable work for those in need of special care.

During the 12 year period between 1921 and 1932 over 610,000 boys and girls were given examinations upon their admission to work in industrial establishments—all the larger establishments and some of the smaller ones; 9 per cent of these workers were found to have defects requiring additional examinations. — *Revue du Travail*, Brussels, No. 7, 1934.

Civil Works Administration Emergency Relief Administration Malaria Control Program in the South*

LOUIS L. WILLIAMS, JR., M.D.

Surgeon, U. S. Public Health Service, Washington, D. C.

IN the spring of 1933 the Federal Emergency Relief Administration was organized. Some of the state health departments immediately utilized relief labor on their malaria control projects. In October the Civil Works Administration was organized and announced that it was searching for worthy projects on which CWA laborers might be given gainful employment. The Public Health Service submitted to them a program for antimalaria drainage. This was enthusiastically incorporated in the CWA program and an organization for its administration was set up in November, actual work commencing in December, 1933.

On such short notice it was not possible to organize technical supervisory forces in 14 states, from resources within the state health departments, with which to direct the large number of laborers who must be put to work quickly. The Public Health Service was asked to supply this technical supervision for the drainage work and was given $350,000 of PWA funds through the CWA.

The organization within each state consisted of a state director of malaria control to assist the state health officer; district supervisors, whose number was based upon expected federal allotment of labor; and local supervisors. The federal allotment was greatly augmented, as nearly every state far exceeded the federal quota of drainage laborers. The assistant state directors and the district supervisors, working with and under the state boards of health, made surveys as rapidly as possible in order to find the most worthwhile projects; secured approval of projects; trained local foremen; received the labor and put it to work.

State records defining the malarious areas of each state, physicians' reports, hearsay evidence, and population densities, have defined the limits of each project. As was to be expected, there were frequent requests from influential landowners who sought free drainage where no particular malaria problem was involved. Fortunately, these were for the most part detected, and failed to get approval.

There were, in spite of the hurriedness of the entire relief organization, 14 assistant state directors with their 59 district supervisors, and 212 local supervisors, at work before the end of December. For nearly 4 months they supervised an average of 64,000 workers, the peak week accounting for 120,000 laborers. Nearly 6,000 miles of ditch were dug, draining 100,000 acres

* Read before the Third Annual Meeting of the Southern Branch A.P.H.A. in San Antonio, Tex., Nov. 13, 1934.

of pond and more than 200,000 acres of swamp, affecting an adjacent population estimated at 8,000,000 persons. As it was not known how long relief labor would be available, state and district supervisors were urged to secure a promise from local authorities that necessary maintenance would be financed should the relief be suddenly withdrawn. In addition, educational campaigns for the purpose of popularizing the work were initiated to insure its future maintenance. CWA work is at present being maintained in most instances, and probably will be as long as relief labor is forthcoming.

The CWA came to an abrupt close at the end of March, 1934; so the malaria control project was continued under the Emergency Relief Administration. The immediate change in policy stopped most of the drainage work and a number of weeks passed before its continuance was assured under the various state relief administrations. Before the end of May most of the states were continuing the work.

Under the ERA there were 15 assistant state directors with the number of district supervisors reduced to 50, and only 7 local supervisors. However, this policy change from a work project to a relief project with its slower growth led to better planning of each project and, in the main, work was better done than under the hurried CWA. To date nearly all CWA projects have been completed and most of the remainder will be finished before the end of December, 1934. This does not apply to a few very large projects which have been undertaken on the theory that relief labor (certainly in some places) will be available for 2, 3, or 4 years more. During the last 6 months of the Emergency Relief operations, approximately 2,000 miles of additional ditch have been dug, draining over 16,000 acres of ponds and somewhat more than 30,000 acres of swamp, affecting an adjacent population of 2,000,000 persons. In places where drainage is not at present feasible some home screening projects have been undertaken. In a number of cases definite contract has been secured from local administrations that maintenance work will be locally financed when relief labor is no longer available.

The trend of malaria in the United States has been steadily downward for 70 or more years. The actual decline has fluctuated to some extent. The periodicity of its fluctuation, however, could not be accurately worked out, for usable records were not kept prior to 20 years ago. The records of the last 14 years show that the falling rate curve flattened out about 1919 with somewhat of a rise in 1920 and 1921, and then a resumption of the decline. The curve flattened out again in 1926 and showed a definite rise in 1927 and 1928, subsequently falling as before. The curve flattened out in 1932 and rose a little in 1933, and indications are that during the summer season of 1934 there has been a very sharp rise.

The decline in the malaria rate has been accompanied by a recession of the northern limit of the malaria territory; and also has shown a lessening of the virulence of the disease. Each rise in the rate has been accompanied by a reinvasion of a small portion of territory formerly malarious; by an increase in the virulence; and by local epidemics. The rise of 1934 indicates a rate higher than any during the last 20 years, for one or more definite epidemics of malaria have appeared during the fall in 7 states, 3 of which are states that have been at the northern limits of endemic malaria, and 1 of which has been entirely out of the malaria column for over 10 years. Also, the northern limit of malarious territory has moved north many miles and the virulence of the disease is greater than it has been for over 20 years. It is a matter of considerable interest and significance that the reports

so far available indicate that the increases in malaria have not occurred where Emergency Relief projects have been completed. It is not difficult to imagine the situation had not the hazard of malaria been removed from the bulk of the 10,000,000 people adjacent to these projects.

I do not mean to paint an ideal picture of perfect work perfectly carried out. Many projects during their inception were improperly planned by supervisors of limited experience and some even were constructed where work was unnecessary. Here and there ditches appeared that were almost impossible to maintain. However, most of these errors were corrected, and those few remaining are on the program for proper reconstruction. The estimates of our most experienced men in the field who have visited a large number of projects indicate that at least 90 per cent of the work has been good work and that, at a maximum, not over 10 per cent can be classed as poor. Lack of maintenance has created some new impoundings where loops of old streams, left open, have filled with backwater, or where uprooted trees have clogged main ditches. Some winter-dug ditches constructed by untrained personnel have very wide, flat bottoms. During the summer there has been insufficient water to maintain a continuous flow so ponds have appeared in territory hitherto lacking in ponds. Here and there, particularly in the earlier ditching, there are large spoil banks too close to the edge of the ditches. Occasionally there can be found a ditch, through a swamp, with no laterals tapping deeper pools near the outer edges. These very errors were in themselves educational. The engineers and foremen, observing the operation of the poorly constructed ditches, seldom repeated the errors. These experiences have not only educated supervisors, engineers, and foremen, but also thousands of laborers throughout the South. This, in addition to the educational program, has gone a long way toward teaching the bulk of the population in the malarious areas to recognize good drainage and presages future control.

In addition to the drainage projects a blood index was taken to determine the endemic rate of malaria in the 15 states. To date, 129,000 slides have been examined. Unfortunately, the slides could be taken only while the CWA was in force and therefore were secured only in the winter and very early spring. At that part of the year the reservoir of malaria is at its lowest. The 129,000 slides show an infection rate of 5.8 per cent. This is divided into nearly 60 per cent benign tertian and 40 per cent estivo autumnal. There is a scattering of quartan—less than half of 1 per cent. In one state an in-

BLOOD INDEX—MARCH THROUGH MAY, 1934 *

State	No. Exam.	No. Pos.	% Pos.	B. T.	% B. T.	E. A.	% E. A.	Quar.	% Quar.	Mix.	% Mix.	Un-det.	% Un-det.
Arkansas	9,607	686	4.7	361	61.6	302	37.8	..	...	23	0.5	..	...
Florida	13,384	679	5.1	188	27.6	491	72.3	..	...	..	...	..	...
Georgia	27,005	1,136	4.2	632	55.7	423	37.2	29	2.6	6	0.5	46	4.0
Kentucky	4,794	344	7.2	105	30.5	237	68.9	..	...	2	0.58	..	...
Louisiana	9,377	600	6.4	321	53.5	270	45.0	1	0.16	8	1.3	..	...
Mississippi	19,172	1,156	6.0	590	51.0	551	47.7	2	0.18	13	1.1	..	...
Missouri	4,452	397	8.9	207	52.2	180	45.3	..	...	10	2.5	..	...
New Mexico	4,230	53	1.3	47	88.7	6	11.3	..	...	..	...	..	...
North Carolina	8,357	124	1.5	52	41.9	71	57.2	..	...	1	0.8	..	...
South Carolina	3,141	198	6.5	76	38.4	116	58.5	3	1.5	3	1.5	..	...
Texas	22,643	2,221	9.8	1,949	87.7	267	11.1	..	...	5	0.22	..	...
Virginia	2,770	11	0.39	11	100.0	....	....	..	...	..	...	..	...
Total	128,932	7,605	5.8	4,539	59.7	2,914	38.3	35	0.46	71	0.93	46	0.6

* Index report only of number of slides examined through October, 1934. Over 50,000 stained slides yet to be examined.

dex in the summer shows an infection rate among adults of 10 per cent. A number of localities experiencing severe malaria outbreaks recently have shown rates from 50 to 65 per cent. In our former studies fall rates of 18 per cent to 26 per cent have not been at all unusual. A number of such areas on recent resurvey have exceeded 30 per cent. The 10,000,000 persons adjacent to drainage projects were known to harbor malaria parasites at the rate of 5.8 per cent during the winter—what the rate would have been this fall without the control work it is impossible to say, but a conservative estimate places it at not less than three times that figure. At least one can say that the benefits have been considerable.

If the present program can continue, the ultimate benefits to the South are incalculable. Maintenance of the work and extension into new territory is assured as long as ERA labor is available and is provided with adequate supervision. The Public Health Service has nearly exhausted the fund allocated to it for supervision, so if direction through the State Boards of Health is not forthcoming we may confidently expect to see ERA labor placed on other projects. The immediate concern of each southern state health department is to devise at once a workable plan that will assure continuation of expert supervision.

Effects of Depression on the Vision of Children

SCANT attention has been given in this country to the manifestations of disease of the eyes following long periods of dietary insufficiency and imbalance in a large group of our populace during the present depression. It has been assumed that though these diseases may be found in China, and were to be found in Germany during the war, this country has escaped them during the present depression.

Unfortunately, as a result of the long depression and consequently poverty, these diseases are beginning to appear in this country. Totally inadequate or imbalanced diets of the unemployed are beginning to exact their toll. Among the children of New York City, particularly in certain sections of the community, I have noted increasing incidence of pathology of the eye of this nature.

Disease of the eye due to diets deficient in vitamin A content is becoming far less rare than it used to be considered; I was almost impelled to say, are becoming fairly common. Xerophthalmia of a mild form and hemeralopia (day-blindness) are not at all uncommon. I have noted that in quite a number of children proper refractive correction failed to give a satisfactory improvement of vision, in the absence of gross pathology; that vision findings with the same correction were better on dull and cloudy days than on bright, sunny days; and finally that placing these children in a dark room for 10 minutes to a half an hour resulted in a sharp rise in vision, and exposure to bright light caused a rapid drop in visual acuity. These cases rapidly respond to vitamin A therapy in the form of carital, cod-liver oil, and a diet incorporating raw carrots, with a sharp rise in vision. Some of the more long-standing cases, however, present corneal changes which are less promising in prognosis for vision. Pigmentary changes are especially prominent in negro children. . . . E. M. Josephson, M.D. *The Eye, Ear, Nose and Throat Monthly,* Dec., 1934.

Report of Special School Health Studies in New York City*

DONALD B. ARMSTRONG, M.D., Sc.D., F.A.P.H.A.†
Third Vice-President, Metropolitan Life Insurance Company, New York, N. Y.

FOR the past two years, a study has been conducted in New York City schools, primarily for the purpose of finding out the reasons why extreme physical defects in school children remain uncorrected. The study has been directed by the Research Division of the American Child Health Association, in coöperation with the City Department of Health and the Department of Education, and with the guidance of an Advisory Committee representing the active participating, and certain other agencies. The committee was under the chairmanship of Dr. Philip Van Ingen, and the plan and research direction of the study was the work of Dr. Raymond Franzen (see full report). The inquiry was made possible by the financial support of the Metropolitan Life Insurance Company, in accord with the company's long established interest in and efforts toward the improvement of school health programs.

From the study there have been presented in the final report just published not only recommendations for changes in the New York City School Health Program, but also generalized principles of procedure that are deemed applicable to other cities throughout the country. This discussion will center on those principles, merely drawing on the results as illustrative material.

The plan of the study was somewhat unique. It concentrated on a limited phase of the school health program—the reasons for failure in securing corrections. This angle of the subject was emphasized in the belief that it would provide new points of view as to the effectiveness of the examination and follow-up efforts as a whole. The study first called for the independent and fresh identification of children with extremely severe physical defects which had not been corrected. This involved extensive preliminary work in the development of screening and verifying tests. The experience of the American Child Health Association in its School Health Study was drawn on heavily for this purpose. With the severe defect cases identified, the next step was an intensive investigation of these cases to determine the cause for the continued existence of the defect. The school records were inspected to see if the handicap had been routinely detected; the teacher was interviewed at length to ascertain what she had done to effect correction; the school nurse was questioned to find out what follow-up she had been carrying on; and, finally, a visit was made to the home in order to complete the information. Considerable preliminary experimental attention was expended in

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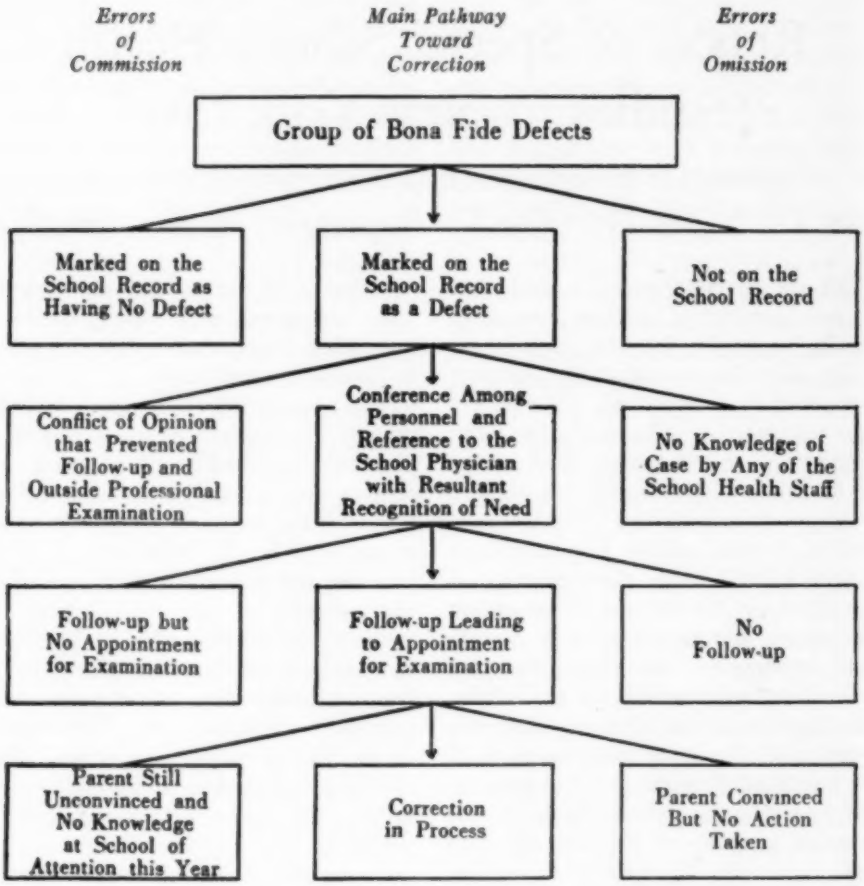
† Prepared in collaboration with George T. Palmer, Dr.P.H., General Director of the Study for the American Child Health Association and now Secretary of the Department of Health of New York City; and Mayhew Derryberry, Ph.D., Associate Director of Research, American Child Health Association.

CHART I

METHOD OF CLASSIFICATION OF UNCORRECTED DEFECT CASES


Errors of Commission
Main Pathway Toward Correction
Errors of Omission
Group of Bona Fide Defects
Marked on the School Record as Having No Defect
Marked on the School Record as a Defect
Not on the School Record
Conflict of Opinion that Prevented Follow-up and Outside Professional Examination
Conference Among Personnel and Reference to the School Physician with Resultant Recognition of Need
No Knowledge of Case by Any of the School Health Staff
Follow-up but No Appointment for Examination
Follow-up Leading to Appointment for Examination
No Follow-up
Parent Still Unconvinced and No Knowledge at School of Attention this Year
Correction in Process
Parent Convinced But No Action Taken

developing the form of these inquiries. From an analysis of these exhaustive case histories, it was possible to determine what steps had been taken toward correcting the defect, if any, and wherein the failure had occurred.

As a means of summarizing the causes for failure, a schematic diagram was constructed (see Chart I), showing the usual steps that are taken in bringing about the correction of a defect. These steps, shown in the center of the chart, have been designated as the "Main Pathway Toward Correction." In addition, the chart shows the deviations or errors that may occur at each step in the procedure, thereby causing cases to be shunted out of the main pathway. The errors may be "Errors of Commission" (shown on the left), in that a wrong procedure has been followed, or they may be "Errors of Omission" (shown on the right), in that nothing has been done.

The first step on the pathway toward correction usually is an examination and the recording of the defect. The school may err in this step by failing to detect the severe condition, or it may fail to examine the child. Next, through a

pooling of information by the teacher, nurse, and physician, selected cases are placed on the nurse list for follow-up. In this step, there may be disagreement among the personnel concerning the need for follow-up or there may be a failure even to consider the case. Once the personnel are agreed on the need for follow-up, the remaining steps are usually follow-up, appointment for examination or treatment, and finally correction. The kinds of errors that occur at these stages are shown on the chart.

Four types of defects were studied in this manner: vision, teeth, nutritional status, and hearing. In addition, somewhat different types of investigation were made for tonsils, pediculosis, and awareness of health facts.

Perhaps the outstanding contribution of this study is the revelation of the major causes for lack of correction. These are not, as is so commonly believed, the lack of examinations or the failure of parents to respond. Primarily, they are the failure to identify the severe cases in the first place, and the failure to follow the cases through the successive steps to the desired outcome. Apparently, we have been too prone to blame parents for their indifference to information supplied to them. Actually, when the facts are closely examined, parents are less to blame than the school health program and the personnel involved in that program. In nearly nine-tenths of the cases with severe hearing defects, for instance, no notice had ever been transmitted to the parents. The same was true for two-thirds of the vision and nutrition cases, and for half of the severe dental cases.

The faults in the school health program may be traced to a number of causes, and these vary with the particular defect. In the case of hearing, the trouble lies almost wholly in the failure to detect the condition. It was either that no hearing test was ever made, or if made was never recorded, or wrongly recorded as disclosing no handicap.

With dental defects, the situation is quite different. Children with bad teeth are usually known. They appear on the record. The loss comes in the second stage, in deciding which children to follow up. Here, great numbers with severe conditions are passed over with no further attention. The cause of this traces back to the method of marking defects in the first place. All the severe cases are noted, to be sure, but in addition to this, innumerable other cases of lesser severity are also noted on the records, and there is no distinction on the records as to the degree of severity. As a consequence, there is no basis for selection of the really severe cases, and children are chosen for follow-up on some other grounds than the severity of their dental defects. The number of children recorded with some dental defect is so great that the follow-up burden becomes overwhelming. The severe cases are lost in the very magnitude of the problem.

With vision and with nutrition, the losses are spread out over the different steps in the school health procedure. There is an appreciable loss at the outset in labelling cases normal when they actually have an extreme defect. Mistakes are made among the school health personnel in selecting cases for follow-up, and the follow-up itself is only too frequently superficial and ineffectual.

Lack of corrective facilities is a pronounced factor only in the case of teeth. But even here, only one-third of the parents are aware of the serious condition of their children's teeth. These parents have no excuse other than their inability or unwillingness to seek or find professional attention. The other two-thirds, as well as the parents of the children with vision, hearing, and nutrition defects, may properly plead ignorance. Little or no information has

been conveyed to them by school or health authorities concerning the cases under review in this inquiry. But let us not be misunderstood in these remarks. This study relates to severe uncorrected defects. When we say that the school health service has not conveyed information to parents in so many of these cases, there is no intent to imply that contact with the home has not been made for a great many other cases. Much successful corrective work has been instigated by the school health personnel. The study of these four conditions, it must be remembered, was focused on the severe cases that still remain uncorrected. It was limited to these cases and to an investigation of the failures in the attempt to identify the causes of the failure.

In the case of pediculosis, it was found, through a study of the activities of the personnel in a number of schools, that the reason for the failure to correct the defect, *i.e.*, delouse infested children, was the lack of a definite policy concerning the responsibilities of the nurse and teacher. The nurse considered that the teacher should see that the condition was cleaned up, and the teacher maintained that the nurse should do the necessary follow-up.

The investigation of the reason for failure to correct serious tonsillar defects could not be carried out in the same manner as the study of vision, dental, and nutrition defects. In the first place, there were no definite objective criteria of what constituted a serious tonsil defect. In the second place, a preliminary examination of 1,000 11-year-olds showed the rather astonishing fact that 61 per cent of the cases had already had a tonsillectomy. The study was then changed to focus on the methods of examination, recording, and follow-up that resulted in so many tonsillectomies.

Accordingly, the 389 children out of the original 1,000 who still retained their tonsils were examined by a group of school examiners, and 45 per cent of them were recommended for tonsillectomy. The 215 cases not recommended by this first group of physicians were seen by another group of school examiners, and 46 per cent of these were recommended for tonsillectomy. The remaining 116 who had been marked as not needing attention by these two groups were seen by still a third group of school examiners, and 44 per cent of these were recommended for tonsillectomy. At the end of this experiment, there was left a residue of only 65 out of 1,000 who would not have had a tonsillectomy if all the recommendations of the physicians had been carried out. Furthermore, when a history was taken of the cases, practically no relation was found between the recommendations and a history of sore throats and colds.

The study of the follow-up revealed that nurses often followed up tonsil defects and neglected other serious conditions. In summary, the need in New York City with reference to tonsils is not more corrective work, as it was in the case of the other conditions, but rather more standardization and discrimination in the selection and follow-up that is carried on.

The experience in the study of these several defects gives rise to several recommendations for overcoming the difficulties that are revealed. The first is a proposal that the volume of the preliminary service—that is, the examination and the selection of defects—should be guided, if not determined, by the corrective services available. If the preliminary work is started wholly without regard to the corrective outlet, and the number of children started on the pathway to correction is so great as completely to overtax the outlet, then much of the preliminary effort is wasted. We say this advisedly. If there is no possibility of securing corrective service,

then there is no point in continuing to swell the number who need such service. We can either examine less or follow up only the really severe cases. In either case, it would seem to be far more sensible to save on the preliminary steps and devote effort and funds toward increasing the corrective service. As these services expand, then the preliminary examinations can be extended.

If we look at the matter frankly, I think we will agree that we have been too much concerned in getting children examined—examined quickly and frequently. We have been too little concerned with the character of the examination and with just how we were to make use of the facts gained from the examination.

The second proposal is that we should be more accurate, and, at the same time, more economical in identifying defects. Grave errors are now being made in picking out the cases most urgently in need of attention. Tonsils and nutrition as reported in this study are striking examples. There is no excuse for ignoring these facts. But improvement in accuracy does not necessarily mean increased expense. There are screening procedures that can be used first—simple tests in the hands of non-medical technicians, and histories as gathered from the daily observation of teachers. The time of the physician should not be used where others with less training can serve the purpose equally well. The physician—both the school doctor and the private family medical adviser, who can and should be utilized to a greater extent than at present—should be largely reserved for their professional, diagnostic, and therapeutic judgment, an attribute that others are unequipped to supply. Examples of these screening methods are discussed in the report.

Success in the correction of defects does not depend upon the doctor, the nurse, or the teacher alone. It is distinctly a coöperative job. There must be rapport between the different people concerned. This may sound trite. It is the old familiar coöperation which has been preached and preached and preached again. And yet, in spite of the best of intention and good will on the part of department heads, coöperation is often ignored in practice. There are glaring examples. There are doctors who spurn suggestions from a teacher. There are teachers who do not want to be bothered with any health matters. If families are going to be induced to do something about the facts disclosed in the school, then doctor, nurse, and teacher must work as a team. It is grossly ineffective to do otherwise.

This leads directly to another recommendation. The nurse must have information intelligible to the parent, backed by professional authority when she visits a home. It is not enough to tell parents about 2X tonsils or Number 4 Nutrition. She must equip herself with clinical facts, and the unfavorable history derived from school experience. Her source is the doctor and the teacher. There must be personal discussions. Records may be fewer, but fuller. If all the effort at follow-up is to mean something, then parents must be given substantial and convincing evidence. This is much more effective than the mysterious symbols used on the child's record card.

Further than this, there is the old question of records. Records must be alive. Cases should not be lost from official sight. Records should show the progress of any child on the pathway to correction. It should be possible to tell at a glance how many children and which children have reached each step along the pathway. This is a plea not for more records, but for records and filing methods better adapted to the needs.

The school medical program as now conducted is, in general, one of the least

efficient of our public health procedures. It has developed in a diversity of patterns, practically all of which represent different adaptations of the clinical or individual method to large school groups. These adaptations have usually resulted in just such inefficiencies as have been revealed in this study. Consequently, during the depression, this inefficient field of service has been the one that was most readily cut.

This study has not only pointed out the inefficiencies, but it has also suggested new points of view applicable to large groups, and has indicated new lines of approach which should prove useful in the reconstruction of effective school medical programs. The committee that advised in connection with the work is unanimously convinced that those directly responsible for the inquiry have made a contribution of very great and far-reaching importance to the health and school organizations, and to the well-being of our urban school population generally.

Unemployment and the Physical Condition of Children in Germany

FOR the purpose of determining the effect of unemployment on the physical condition of children, studies have been made in several cities of Germany. In Kiel a study was made in 1933 of the records of physical examinations of 2,350 school entrants. The children were all 6 years old and were divided into 5 nearly equal groups, according to the family's economic condition. It was found that the average height and weight of children of unemployed persons on relief rolls and of partly employed persons were lower than those of children from better situated families and that the difference increased with the improvement in the economic situation.

A study made in Berlin in 1931 of 1,100 working class children varying in ages from 6 to 14, one-third of whom were from unemployed families, showed that the average weight of the children of unemployed parents was 2⅔ pounds less than that of children of employed parents, and the average height ¾ inch less. The study also revealed an inferiority in the general condition of the children of the unemployed, manifested by greater frequency of tuberculosis, nervous disorders, and difficulties of behavior.

In a study made in Vienna in 1932 of 800 children between 1 and 6 years old, half of whom came from unemployed families, it was found that 57.5 per cent of the children of the unemployed were below normal in weight, but only 34 per cent of the children of the employed.—*Archiv für soziale Hygiene und Demographie*, Berlin, vol. 8, No. 6, 1934.

Housing Problem in a Southern City*

With Special Reference to Its Influence on Residual Typhoid Fever and on Infant Mortality

L. M. GRAVES, M.D., AND ALFRED H. FLETCHER, F.A.P.H.A.

Superintendent, City Health Department, and Sanitary Engineer, City Health Department, Memphis, Tenn.

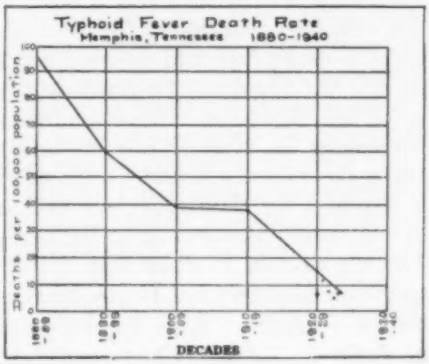
ALL students of public health appreciate the fact that environmental hygiene plays an important part in the control of certain diseases. The term housing used in its broadest sense includes not only the house itself but the immediate surroundings, such as drainage, water supply, sewage disposal, the air breathed by the occupants, the presence or absence of sunlight, etc.

The relationship of housing to health has defied direct quantitative expression because of the many other factors indissolubly linked with the slums, such as poverty, ignorance, long and fatiguing hours of work, exposures to extreme weather conditions, malnutrition, inadequate medical and nursing care, etc.

It has long been recognized that the substitution of a safe for an unsafe water supply in a city is followed by a sharp drop in the typhoid case and death rates. It has also been observed, however, that the reduction is less marked in some cities than in others. This seems particularly true of southern cities as contrasted with those in other sections of the United States. Reasons for these higher residuals in southern cities seems never to have been satisfactorily explained. Memphis in its early history obtained its water from Wolf River, a small stream which flows into the Mississippi at the site of the city. Later (1890) this source was supplemented by wells, but the system was still subject to contamination especially in flood season. In 1925 the use of river water was completely discontinued and a new system installed, using water from a series of deep wells. This last system has been recognized as a safe and satisfactory supply in every way. The typhoid death rate came down rapidly following these improvements in the water supply, as will be seen from the accompanying Figure I.

It will also be observed, however, that there remains a rather high residual.

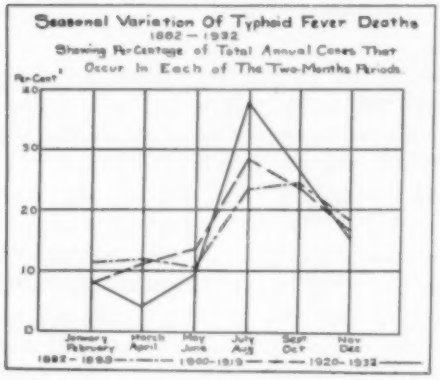
FIGURE I



* Read before the Public Health Engineering Section of the American Public Health Association at the Sixty-third Annual Meeting in Pasadena, Calif., September 4, 1934.

An interesting point in this connection is the change in seasonal prevalence. A higher percentage of deaths occurred in the winter and spring in the periods from 1882 to 1899, and 1900 to 1919, before the installation of the present safe water supply than during the last period 1920–1932, but a higher percentage of deaths has shifted to the summer and fall months for the period 1920 to 1932 than during the early years (see Figure II).

FIGURE II



The relatively high typhoid rate in Memphis may be partially explained by the fact that the city is the only hospital center for an unusually large poorly sanitated rural area which contributes a large number of nonresident deaths; but the fact remains that the rate is still higher than would be expected when the nonresident element is excluded.

In an effort to explain this high residual, it was decided that a study of the possible relationship between the typhoid death rate and housing conditions in the city would be desirable. As it was felt that some of the same factors influencing the typhoid rate might also affect the infant mortality rate, which is also high for the city, it was decided to include infant mortality in the study. The opportunity to make such a study was offered by the Civil Works Administration Program. With the assistance of Rollo H. Britten, Chief Statistician of the U. S. Public Health Service, a housing survey was carefully planned which was designed to yield information which it was hoped would shed light on the high typhoid residual and the high infant mortality rate, and could be used in other studies and in preparing an effective housing code for the city.

Thirty-five workers were employed for about 6 weeks. One block out of every 4 blocks in each ward was drawn by an architect or engineer, showing on a card the size, spacing, shape, and height of all buildings, and checked against the information on the survey cards which was secured on every living unit within these blocks.

Briefly the tabulated data will show:

1. The vacancy-occupancy conditions either by wards, by race, by condition of the house itself, and by state of sanitation and surroundings.

2. The physical condition of dwellings, by wards, or race and in other groupings, and including state of repair, construction of wood or other material, the roofing material, number of rooms, number without sunlight, number without windows and size of largest room.

3. The sanitation provided at each dwelling, grouped by wards or color. This included data on the source of water and how furnished to tenants. Whether have a bathtub and location of. How sewage disposed of, location of toilets, and safety of disposal method.

4. Pertinent facts concerning the tenants such as, persons per room in each living unit, the age grouping, number of pay boarders, families living in cellars, whether tenant owns or rents, weekly rental, and how long lived there.

A ward map of the city was prepared spotting those sections generally recognized by members of the Health Department as slum areas. They contain such conditions as those shown in the accompanying photographs, and were selected because of the obviously poor housing conditions. These pictures are inserted to enable students in other sections of the country to visualize the southern housing problem. The problem is not so much the lack of fresh air and sunlight, land or room overcrowd-

Poor Housing Conditions in Southern Slums

ing, as that until recent years houses have been built in the rear of lots and on alleys with outside communal toilets.*

Typhoid fever case rates, infant mortality rates, percentage without private toilets, persons per room, percentage of houses needing repair, and other factors, were computed for 9 population groupings:

(A) and (B) Negroes in 2 groups of slum wards
(C) For negroes in the suburban area or belt on the outskirts which has been recently annexed to the the city.
(D) For negroes in the remaining wards of the city.
(A) to (D) inclusive. For negroes in the entire area studied.
(A) and (B) For the white population for the 2 slum areas combined.
(D) For the white population for the rest of the city exclusive of the recently annexed territory.
(A) to (D) inclusive. For the white population for the city as a whole.
(A) to (D) inclusive. For the combined white and colored rate for the city as a whole.

Table I shows these rates.

The typhoid fever case rates used in this paper are for the years 1929 to 1933 inclusive, which are the average number of resident cases per 100,000 population. The infant mortality rates are the average number of infant deaths per 1,000 live births for the years 1930 to 1932 inclusive.

It will be noted from this table that the highest typhoid case rates and the highest infant mortality rates are among negroes, and that the negro rates are highest in the slum areas. The highest rates for whites are also in the slum areas. A detailed study of the rates and factors involved in the suburban belt indicated that the rapidly changing conditions due to extensions of water and sewer mains and connections, together with nursing and sanitation service, make it necessary to exclude this area from our study.

Typhoid case rates for negroes in groups of wards within the slum area were studied in relation to the per-

* The word toilet as used throughout this paper does not refer to the privy but to toilets connected to the city sewer.

TABLE I

INCIDENCE OF TYPHOID FEVER CASES AND INFANT MORTALITY IN 9 GROUPINGS OF THE POPULATION

COMPARED ACCORDING TO PER CENT WITHOUT PRIVATE TOILETS

Groups	Number of Wards	Area in Acres	Percentage Without Private Toilets	Population	Typhoid Fever Case Rate 1929–33	Infant Mortality 1930–32
"A" Colored	8	2,827	55.8	28,188	51.7	128
"B" Colored	6	1,554	92.2	13,446	38.7	118
"C" Colored	12	11,976	94.2	16,117	50.7	166
"D" Colored	24	12,822	60.0	38,799	35.0	111
"A+B" White	14	4,381	12.9	33,652	36.4	84
"D" White	24	12,822	2.1	102,766	22.8	53
Total Colored	50	29,179	69.2	96,550	41.0	128
Total White	50	29,179	8.5	156,528	27.0	64
Total	50	29,179	37.3	253,143	32.3	90.2

centage of families without private toilets which in Memphis means those families who use outdoor communal toilets. In a group of wards in which the percentage of families without private toilets was 80 or above, the case rate was 64.2. In a group of wards where the percentage of families without private toilets was 60–79, the rate was 43.1. In a group of wards in which

Outdoor Communal Toilets

TABLE II

INCIDENCE OF TYPHOID FEVER CASES AMONG COLORED IN SLUM AREAS 1929–33 INCLUSIVE COMPARED IN THREE GROUPS ACCORDING TO PER CENT WITHOUT PRIVATE TOILETS

Group	No. Wards Falling in Group	Percentage Without Private Toilets	Population	Typhoid Cases	Average Annual Case Rate
A	4	80 & over	7,793	25	64.2
B	6	60–79	20,786	45	43.1
C	4	60 & less	13,055	19	29.1

the percentage of families without private toilets was below 60, the rate was 29.1 (see Table II).

A study of the negro infant mortality rates, however, did not seem to show a relation to the percentage of families living without private toilets as in the case of typhoid fever.

In order to make further comparisons of housing conditions to typhoid fever and infant mortality, a housing index was calculated for each ward by using the following three factors:

1. Persons per room
2. Percentage of dwellings not in good repair
3. Percentage of living units with outdoor toilets

The rank for each ward for each of these factors was obtained, placing them in order with the poorest ward at the top as No. 1, the second poorest ward as No. 2, etc. The average of the numbers representing the numerical rank of the ward for the 3 factors was taken as the housing index for that ward. This index was calculated for colored and white races, and in each case those

TABLE III

COLORED INFANT MORTALITY AND TYPHOID FEVER CASE RATES GROUPED BY WARDS ACCORDING TO VARYING HOUSING INDICES

Group Index	Number of Wards	Typhoid Case Rate	Infant Mortality
0–4	4	59.4	177
5–9	4	39.4	118
10–14	8	36.7	117
15–19	6	38.3	113
20+	6	39.5	91

wards having the lowest housing index as a group, had the highest typhoid rate and also the highest infant mortality rate. The next high group had a lower rate and the highest group had the lowest rates. Although in the previous table the infant mortality rates did not show a relation to outdoor toilets, it did to groups of wards having varying housing indices as shown in Table III.

TABLE IV

WHITE TYPHOID FEVER AND INFANT MORTALITY RATES GROUPED BY WARDS ACCORDING TO VARYING HOUSING INDICES

Group Index	Number of Wards	Typhoid Fever	Infant Mortality
0–12	12	47.8	78.8
13–24	12	17.3	69.2
25–37	13	22.7	48.6

TABLE V
CORRELATION OF WHITE TYPHOID RATES ACCORDING TO PER CENT COLORED WITHOUT PRIVATE TOILET

No. of Wards	Colored Rates	White Rates
9	50 or more	40.9
10	less than 50	20.0

In the case of whites a relation was also indicated between wards with low housing indices and high typhoid fever and infant mortality rates as shown by Table IV.

It is interesting to note that in the group of wards where the colored typhoid fever rate was 50 or more per 100,000 population, the white rate for these same wards was 40.9. In the remaining wards with rates of less than 50 per 100,000 population for the colored, the white rate was 20.0. This correlation exists even though the percentage of outdoor toilets among the whites is negligible in all wards (see Table V).

OBSERVATIONS AND CONCLUSIONS

1. In this study both typhoid case rates and infant mortality rates were found to be highest in those wards which are obviously slum areas.

2. Typhoid fever rates for the colored in slum areas showed a relation to wards grouped according to percentage of living units without private toilets.

3. Infant mortality rates for the colored in slum areas did not show a relation to wards grouped according to percentage of living units without private toilets.

4. Wards were grouped for purposes of comparison according to a slum index.

5. Typhoid fever case rates and infant mortality for both the white and colored races showed a relation to wards when grouped according to their slum index.

6. Typhoid fever rates for the whites showed a relation to wards when grouped according to typhoid fever rates for the colored race or when grouped according to percentage of colored living units without private toilets.

DISCUSSION

CHARLES GILMAN HYDE, F.A.P.H.A.
Professor of Sanitary Engineering, University of California, Berkeley, Calif.

THE authors have presented a paper of great value and interest and are deserving of the highest commendation. A vast amount of statistical work has been involved in its preparation. The information contained therein is of the sort which is fundamental to a better understanding of the complex and interwoven factors concerned with the matter of housing as related to health in general and, more specifically in this case, with respect to residual typhoid fever and infant mortality.

When once the water and milk supplies have been removed as sources of infection, the problem of typhoid fever incidence becomes one of the restricted local environment. The main factors are contact and flies, and possibly certain contaminated foods. To the extent that housing reflects these factors or conditions, to that degree residual typhoid fever may be related thereto.

The relationship between the public water supply and the typhoid fever death rate through a considerable period of years has been well and explicitly shown by the authors. With the decreasing use of Wolf River water, a polluted source of supply, and with improved sanitation in other respects, the typhoid fever death rate was notably reduced until at length, in 1925, the public water supply was no longer involved. The death rate has been reduced from about 95 in the 10 year

period from 1880 to 1889, as shown by the authors, to about 23.5 *[1] in the years 1924–1926 inclusive; and to a residual in 1929 of only 5.3.[1] It is safe to say that it is only a matter of time, and perhaps a relatively short period, when the typhoid fever death rate in Memphis will have reached a very low and, in a practical sense, an almost insignificant value.

The City of Memphis is fortunate in having an abundant supply of ground water (well water) of highest quality in every respect. There are only 3 other cities in the United States at the present time, having populations in excess of 100,000 which derive their entire supply of water from the ground: Dayton, Ohio (population 200,000), Lowell, Mass. (population 100,000), and Spokane, Wash. (population 116,000).

It is to be expected that, under the existing circumstances, the elimination of the public water supply as a factor in the typhoid death rate would decrease the percentage of cases occurring in summer and fall. With the lowered incidence of typhoid, in general, the number of carriers is proportionately reduced, presumably, and the volume of infectious material likewise reduced. Thus the fly infection danger, although always significant so long as there are exposed typhoid dejecta, becomes less menacing and important. The saying that "Nothing succeeds like success" applies well to the warfare against infectious diseases such as typhoid. Once the absolute incidence is lowered, all possible sources of local environmental infections are also reduced.

In the time available to the speaker since the receipt of this paper it has been impossible to review in detail the climatic conditions of temperature, rainfall, and humidity which might have a more or less controlling effect upon fly breeding. However, the monthly rainfall, temperature, and humidity statistics for Memphis for the year 1930 were compiled.[2] These are presented in Table I. It is hoped that the conditions for 1930 were sufficiently typical

* Actually typhoid and paratyphoid, with rates approximately as follows: 1924, 31.1; 1925, 24.5; 1926, 15.6.

TABLE I

RAINFALL, TEMPERATURE, AND HUMIDITY AT MEMPHIS BY MONTHS, YEAR 1930 [2]

Months	Rainfall Inches	Relative Humidity			Temperature—Deg. F.		
		8 A.M.	12 M.	8 P.M.	Mean	Max.	Min.
January	12.12	80	71	76	36.2	43.2	29.2
February	4.78	74	64	66	52.7	60.4	45.0
March	3.12	68	55	58	51.2	59.4	43.0
April	1.45	63	45	44	65.8	74.5	57.1
May	5.86	77	57	64	70.6	78.5	62.8
June	0.19	63	40	40	78.9	88.5	69.3
July	0.14	64	41	40	85.4	95.3	75.6
August	0.49	67	44	44	81.4	91.3	71.4
September	2.12	80	58	59	76.8	85.7	67.9
October	1.96	75	51	56	61.5	69.9	53.1
November	2.42	78	65	64	52.0	59.3	44.8
December	2.81	80	66	65	41.0	47.3	34.8
Totals	37.46	..	..	..	....	....	....
Averages	3.12	72	55	56	62.8	71.1	54.5
Maximum	12.12	80	71	76	85.4	95.3	75.6
Minimum	0.14	63	40	40	36.2	43.2	29.2

to warrant the making of certain deductions therefrom.

Hutchinson [3] has shown that flies are fairly active at 55° F. and very active at 65°. A mean daily temperature in the vicinity of 60° may perhaps be assumed to represent the critical temperature below which fly breeding will not be very important and above which it may become serious. If this is true the fly breeding season in Memphis would perhaps begin in April and continue to or through October. Typhoid due to fly infection might therefore be expected to occur from May to November, reaching a peak in July and August. In 1930 the months of June, July, and August were relatively dry, both in terms of rainfall and humidity. This condition would not perhaps greatly affect fly breeding in covered spaces, but it would reduce that which might otherwise occur in scattered manure and feces out of doors.

The unscreened houses and communal toilets shown in the photographs suggest that aggravated conditions of fly infestation and infection may obtain. Such infections would, of course, normally be reflected in the typhoid incidence and in infant mortality as well, especially in that portion due to diarrhea and enteritis. The communal toilet is almost bound to be unspeakably filthy, occasionally if not continuously. It may cause the use of the ground and of all sorts of protected spots for both urinal and fecal discharges. To what extent this practice prevails is not revealed by the authors.

The authors' findings indicate that the typhoid incidence is closely related to the extent of use of the outdoor communal toilets. The travel habits of the fly are such that it may be expected that typhoid would occur among populations provided with private toilets if their abodes are in the general vicinity of filthy outdoor toilets.

With reference to infant mortality Whipple [4] has stated:

> No part of vital statistics is attracting more attention nowadays than the subject of infant mortality. It is, indeed, a serious problem

TABLE II

STUDY OF CONDITIONS IN JOHNSTOWN, PA.
1915

Dirty dry homes versus clean dry homes	162/105	154%	Midwife's attendance at birth versus physician's attendance at birth	180/100	180%
Dirty damp homes versus clean damp homes	204/127	161%	Foreign illiterate mother versus foreign literate mother	214/148	145%
Dirty damp homes versus clean dry homes	204/105	194%	Artificial feeding only, average of 2nd and 3rd months of life, versus breast feeding only during that period	227/63	360%
Yard privies versus water closets	159/108	147%	Very inadequate income, foreign parents, versus adequate income, foreign parents	251/108	232%
Outside, only, versus inside water supply	198/118	168%	Very inadequate income, native parents, versus ample income, native parents	146/78	187%
Baby sleeping with others versus baby sleeping in separate bed	109/56	195%	Very inadequate income, foreign parents, versus ample income, native parents	251/78	322%
Baby sleeping in room with more than 5 others versus baby sleeping in room alone or with 1 other only	123/67	184%			
Baby's room poorly ventilated versus baby's room well ventilated	169/28	604%			

and worthy of most careful study. It is a complex problem and one difficult to understand. It is a problem which goes beyond itself. Newsholme says that "infant mortality is the most sensitive index of social welfare and of sanitary improvements which we possess." Another says that "infant mortality is to the health officer what the clinical thermometer is to the physician." People who will not take care of their offspring will not take care of themselves.

The authors have very appropriately pointed out that infant mortality is inextricably associated with a great variety of social and economic factors as well as those represented by the physical environmental conditions. The relationship to a considerable number of such factors is shown in an illuminating fashion by an analysis of the results secured by an intensive study of infant mortality at Johnstown, Pa., in 1915, by the Childrens Bureau, U. S. Department of Labor.[5] Some of these factors and their effects, expressed in terms of the greater infant mortality under adverse conditions than under fair to excellent conditions, may be stated as shown in Table II.

Some of the conditions recited there undoubtedly have a direct bearing upon infant health. It is obvious, however, that others are in themselves not directly involved but they do reflect generally low or adverse conditions which are immediately associated with a high infant mortality rate.

Effective health control in cities with large percentages of colored population unquestionably represents a very much more difficult problem than that encountered elsewhere. In spite of this handicap many such cities have made remarkable progress. This is the case with Memphis. The writer inclines to the belief that the conditions of health today in southern cities with well or-

TABLE III

ESTIMATED TOTAL POPULATIONS AND DEATH RATES TOTAL (ALL CAUSES), INFANT AND TYPHOID FEVER, FOR CERTAIN NORTHERN AND SOUTHERN CITIES IN THE UNITED STATES, YEAR 1929 [1]

Place	Estimated Population	All Causes		Infants		Typhoid Fever	
		Deaths	Rate *	Deaths	Rate †	Deaths	Rate †
Northern Cities							
Columbus, O.	285,000	4,170	14.6	379	133	7	2.5
Denver, Col.	285,000	4,170	14.6	401	141	7	2.5
Oakland, Calif.	277,000	3,160	11.4	196	71	3	1.1
Providence, R. I.	252,000	3,630	14.4	371	147	5	2.0
Rochester, N. Y.	325,000	3,960	12.2	370	114	2	0.6
St. Paul, Minn.	268,000	2,940	11.0	238	89	3	1.1
Toledo, O.	286,000	3,940	13.8	395	138	1	0.3
Averages	283,000	3,710	13.1	336	119	4.0	1.4
Southern Cities							
Atlanta, Ga.	263,000	4,190	15.9	477	181	16	6.1
Birmingham, Ala.	252,000	3,940	15.6	479	190	15	6.0
Memphis, Tenn.	244,000	3,880	15.9	423	173	13	5.3
Nashville, Tenn.	150,000	2,720	18.1	326	217	20	13.3
New Orleans, La.	452,000	8,030	17.8	748	165	44	9.7
Richmond, Va.	182,000	2,940	16.2	291	160	3	1.6
Washington, D. C.	482,000	7,430	15.4	629	130	15	3.1
Averages	289,000	4,730	16.4	482	167	18.0	6.2

* per 1,000
† per 100,000

ganized health departments are simply those of a comparatively few years ago in northern cities which had no such handicap. This lag will assuredly be gradually overcome except in so far as basic inherited and inherent population tendencies and traits control ultimate progress. As a matter of interest in this connection the speaker has selected, somewhat at random, 7 northern cities with no very considerable colored populations, and 7 typically southern cities, including Memphis, all places in both groups having as nearly as possible the same population as Memphis. For these 14 places for the year 1929 the crude total death rates (all causes), typhoid fever death rates, and the infant death rates have been computed. The figures are presented in Table III. It will be observed that the estimated average population of the 7 northern cities is 283,000 and that of the 7 southern cities is 289,000.

While the average typhoid fever death rates in the selected southern cities is several times those in the northern group of cities, the former is not high, in absolute terms, and is so small in comparison with those of many other diseases as to constitute an almost negligible proportion of the total death rate. It should be noted that in all of the cities included in the table the public water supply is of excellent quality and is not a factor in the typhoid fever death rates.

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Imagination in Public Health

". . . We have always been impressed from our earliest student days with the presence of the great killing diseases. Much greater is the conception that these diseases are primarily the disabling diseases of succeeding generations. Whatever we die of in a way matters less than how we live, and we should in our visualisation of preventive medicine be far more deeply concerned with the causes that underlie the disabilities of the active periods of life than with the specific and direct agencies of death. If we so concern ourselves in our considered thoughts we shall, in fact, eventually attain a much higher level of accomplishment than is otherwise possible to us. What is the vision that we therefore have? Briefly, it is that the minor disablements, the chronic incapacitation of life—such as susceptibility to respiratory catarrhs, chronic dyspepsia, hepatic inefficiencies, disorganisation of the functions of endocrine glands, practically all of the ailments which make for so much of life's discomforts and restraints from full activity—are the manifestations in succeeding generations of injured germ plasm.

Expressed in another way, I would put it to you that the great mass of minor human ailments is the result in succeeding generations of the damage that has been done to parents or grandparents by the presence of one or more of the great disabling diseases. . . ."
—Dr. R. Veitch Clark, Imagination in Public Health, *Public Health*, Nov., 1934, p. 61.

The Public Health Officer and the Control of Syphilis*

JOSEPH EARLE MOORE, M.D.
Baltimore, Md.

I HAVE never accepted an offer to speak before a gathering of physicians with more diffidence than on this occasion. For me, a clinician, to address an audience of public health officials on the subject of the public health aspects of syphilis control is indeed like carrying coals to Newcastle; and this is especially true since your own Commissioner of Health, Dr. Parran, is without question the foremost authority in the country on this topic. To cover the whole field adequately, it would only be necessary for me to repeat verbatim his De Lamar lecture [1] of 3 years ago.

Nevertheless, the clinician engaged in syphilology cannot fail to have rubbed elbows with the public health officer, to have formed some personal opinions as to the adequacy of our present mode of approach to the problem, and to have acquired ideas as to the best method of attack in the immediate future. This is my excuse for addressing you. I hope that you will regard my ignorance of matters administrative and political with leniency and make allowances for the fact that I am invading unfamiliar ground. I hope for pardon, too, if I utilize my own city, Baltimore, as a background for some of my statements and opinions. After all, what is applicable in a large city of one state is—or should be—equally applicable to other large cities.

I have emerged from 15 years of experience in clinical syphilology with several firm convictions. These are: (1) that syphilis is easily the most prevalent of the major communicable diseases; (2) that, directly and indirectly, it costs the taxpayer more than any other infectious disease; (3) that there are already available the weapons with which it might be, if not entirely stamped out, at least reduced from a major to a minor problem within a generation; (4) that though these weapons have been available for a decade or more, we are progressing not forward, but backward—syphilis in this country is actually increasing, not decreasing; (5) that the blame for this paradoxical situation may be placed, at least in part, on the shoulders of the public health officer. This last is, I realize, a bold statement, and may, indeed, like many of the arguments of my fellow townsman, H. L. Mencken, be an over-statement, purposely made to startle an audience. I think, however, that it can be justified. Let me amplify my several points.

In Baltimore, during the 5 year period, 1929–1933, there were more cases of syphilis *reported* to the City Health Department than of any other communicable disease.[2] Its only close contenders are chicken pox, measles, and influenza.[2] More than 18,000 cases of

* Address before the annual convention of Health Officers and Public Health Nurses, Saratoga Springs, N. Y., June 26, 1934.

syphilis have been reported during these 5 years. Startling as these figures are, it is estimated that they represent less than half of the new cases discovered. Three reasons lead to the certain knowledge that the actual number is far larger than the reported number: (1) that reporting is required by name and address, and the regulation is thus obeyed only by hospitals and clinics, but by few or no private practitioners; (2) that the Health Department has heretofore required only the reporting of fresh infections, not of patients with late syphilis, even if diagnosed for the first time; (3) the study of venereal disease prevalence in Baltimore carried out by the U. S. Public Health Service and the American Social Hygiene Society,[3] which estimates (1930) that the annual incidence rate of early and late syphilis is 8,460 cases, more than double the 3,276 actually reported to the Health Department in that year. Were all freshly diagnosed cases reported, whether early or late, I am convinced that the number of cases in Baltimore during this 5 year period would nearly treble that of its nearest competitor, varicella. More than that, each of the years, 1929–1933, has seen a progressive increase in the number of cases of syphilis reported: in 1933, 4,500 as compared with 3,100 in 1929. Worse still, the deaths from syphilis—counting only those reported to the Health Department as actually due to syphilis—exceed the deaths from any other communicable disease except the two leaders, pneumonia and tuberculosis. This statement does not include the deaths from syphilis masquerading under more polite but less definite names. Could these be identified, I believe that syphilis, instead of ranking third as a cause of death, would actually have topped all other communicable diseases. Considering the stress that is laid among public health officials themselves and in the lay press on the reduction of the comparatively trivial mortality from, let us say, diphtheria, this is a sorry record indeed.

Now as to my second point, the costs of syphilis to the community. This is almost impossible to determine with accuracy, because the ramifications of the disease are so wide. It spreads from the free clinic to the hospital wards, from the private practitioner to the state insane asylum, from the obstetrical clinic to the deaf, dumb, and blind asylums. The nearest approach to accuracy has been provided by Loeffler,[4] in his 1932 study of the costs of venereal disease to St. Louis. Here, gonorrhea and syphilis are not separated, though from his data it may be assumed, I think, that syphilis is responsible for the great majority of the financial burden. Nor does he attempt an estimate of the vast economic loss to industry and society through the incapacity and death of afflicted persons. The actual cost of venereal disease—largely syphilis—to the tax payers of St. Louis is estimated at $600,000–$1,000,000 annually; and in addition, another million and a half is spent *by* patients for physicians' fees and for private hospital care, or *for* patients by such welfare and charitable agencies as the private hospitals themselves, the Community Fund, etc. Of the million dollars expended by the tax payers, however, only a drop in the bucket—about $60,000—is spent where it would do the most good, *i.e.*, in the treatment of early syphilis. The rest goes to the upkeep of broken-down cardiacs, the blind, the insane—in short, patients who not only are no longer a public menace, being no longer infectious, but who are also for the most part relatively hopeless therapeutic problems.

In Baltimore, a million dollars represents 10 cents in the tax rate—10 cents on each $100 worth of taxable property. No estimates of the cost of syphilis in Baltimore are available, but

it is a city of almost exactly the same size as St. Louis, with a larger proportion of negroes—which in the depression is synonymous with a larger proportion both of indigents and of syphilitics—and hence with a bill of approximately the same or greater size. And in Baltimore, as in St. Louis, most of this money is spent, not where it might help to minimize the problem of syphilis, *i.e.*, on the adequate treatment of recent infections, or on the prevention of late progression or relapse by the treatment of latent syphilis, but on the patient whose late lesions, often crippling, have already developed.

My third and fourth points need little elaboration. Everyone knows that with the arsphenamines and the heavy metals, the infectiousness of syphilis may be controlled; better still, the disease may be "cured." Our difficulty in this respect has not been that the weapons were lacking. Rather, it lies in two other facts: (1) the widespread ignorance of physicians as to how to use the available methods of attack, an ignorance which extends, unfortunately, even among the medical personnel of some clinics run by Departments of Health; and (2) our inability to persuade patients to continue treatment to the necessary limits. I shall offer presently my own opinion as to practical methods by which public health officials may meet, at least in part, these two difficulties. As to the effects of our failure to utilize available methods, I need not weary you with detailed statistics. It is necessary only to point the contrast between the rising trend of syphilis in Baltimore and northern New York State, for example, with the equally rapidly falling trend in England and in Denmark.

As to my fifth belief, that some of the blame for this situation rests on the shoulders of the public health officials, I must attempt to justify myself. I cannot think that public health experts fail to recognize the magnitude of the syphilis problem. The facts are everywhere protruding like a sore thumb. The simile is reasonably apt, since, like a sore thumb, syphilis is something to be hidden. With the average physician, practitioner or public health official, as with the average layman, syphilis is inextricably tied up with vice, prostitution, and penitentiaries. It is a disease which always attacks somebody else's family, never one's own. It is not to be mentioned in public; in fact, and except for a brief period of publicity during the war, it cannot be mentioned in the press of Baltimore, except by the nauseous euphemism of "social disease"; and Parran's achievement in having its name spread across the front pages of New York papers is almost unique as a public health and a journalistic achievement. There is a conspiracy of silence regarding the venereal diseases in which I believe that public health officials not only share, but for which in large part they are responsible. Their responsibility lies in the fact that, far more than other physicians, they are involved in intimate relationship with every other member of the medical profession and with the lay public. So far as communicable diseases are concerned, they are, or should be, the mouthpieces of medicine.

The conspiracy of silence involves their relationships with the medical profession itself as well as with the laity. It begins, unfortunately enough, in schools of hygiene and public health. The catalogue and announcements for 1933–1934 of the School of Hygiene and Public Health of the university with which I am connected lists, in the course of the 2 year program leading to the degree of Doctor of Public Health, only a small fraction of one short course on the subject of venereal disease control, in the midst of a welter of courses on parasitology, bacteriology, vital statistics, sanitation, etc., and no

hours at all are devoted to practical work in the venereal disease clinics, familiarity with which is essential if the Doctor of Public Health is to know one of the greatest of his future problems.

It extends to the relationships of the health department with practitioners of medicine. Many health officials feel that their duty as to syphilis is complete when they have provided a free Wassermann service and a free clinic for the treatment of the poorest class of infectious patients. Relatively much less stress is laid on syphilis than on the 10 times less prevalent diphtheria, or even on the nearly extinct dodo, typhoid fever. There is no organized effort to develop a sane method of reporting new cases, a method with which practitioners will coöperate because the secrecy which their patients demand is respected, not violated. Syphilis is not classified as a communicable disease, but as a problem apart. It is of interest that even in the weekly *Public Health Reports* of the U. S. Public Health Service, which provides the weekly incidence of a number of communicable diseases in the registration area, syphilis is not listed among them though it is the most important of them all.

Syphilis is at least mentionable between physicians. It is when the health official meets the layman that the conspiracy of silence is still more evident. I lay no particular stress on the fact that in contacts with the general lay public, syphilis is rarely if ever discussed. I am one of those who believe that so far as the medical profession's relationship to venereal disease control is concerned, it is hopeless to place much reliance on the sex education of children in schools, or of adults through pamphlets, radio talks, or magazine articles, or, for that matter, on any part of the complex program advocated by the social hygienists except that which deals with medical control. That part of the population which needs instruction most is the very part incapable of assimilating it. Those who can understand are, for the most part, already able to protect themselves, or through prudery refuse to read or listen. There is, however, a selected group of the laity with whom the public health officer must talk, namely the political officials in charge of government. It is necessary, of course, to sell one's budget to an audience of laymen—city councilmen, state legislators, congressmen. It is easier to lay stress on the dramatically swift consequences of the acute exanthemata than on the dreary chronicity of ultimate breakdown from syphilis. It is easier to arouse public interest and support for funds for free antitoxin for diphtheria control, for milk for malnourished babies, for wholesale tonsillectomies on inspected school children, even for the control of hog cholera, than it is for the victims of syphilis—a disease which is, to use the old Army phrase, the result of one's own misconduct. Unfortunately, this line of least resistance is usually adopted.

In one respect, of course, and whether or not his job is due to political favor, the public health officer often feels that his position is similar to that of other public servants—he cannot proceed faster than public opinion will permit. At present, he believes that public opinion is unwilling to face the facts about syphilis. Therefore, let us wait until it is better prepared. But the public health officer is dealing with a highly technical field in which he must lead, not follow, public opinion; and in no disease does that opinion require intelligent professional leadership so much as in syphilis. Again, one must admit the fact that in any public office, including that of public health, things are accomplished by a system of political give and take. Making all allowances for these two factors, however, it ought to be possible for the public health

officer to use three arguments in dealing with his political confrères: (1) that syphilis is the most prevalent and, therefore, the most deadly of the major communicable diseases; (2) that the disease is not always the result of one's own misconduct, indeed, that innocently acquired marital infections and congenital syphilis make up nearly half of the total, and that a baby dead of congenital syphilis is fully as pathetic as one dead from diphtheria; (3) that even if every infection with syphilis were acquired by means of commercialized vice, it would be an actual saving in money to the community to provide the means for all to receive early adequate treatment, with the aim of reducing not only infectiousness and the spread of the disease to others, but also the late sequelae, and hence the amount of money which must otherwise be spent on the treatment or charitable care of patients with aortic aneurysm, tabes dorsalis, or paresis. The politician is, I think, definitely interested in saving money; the depression has taught him that. Even if the politician is deaf to economic arguments, the tax payer is not. His interest is a keen and urgent one. It is probably true that the expenditure of $10,000 yearly for the treatment of early and latent syphilis will save the community an ultimate $100,000 per year. Even though this be a relative rather than an absolute saving, in the sense that hospital bed space and charitable care now expended on syphilis are freed for other purposes rather than completely eliminated, the community gain is worth while. Presented in this fashion, and backed by the easily obtainable opinion and support of medical and lay leaders, I believe that even the deafest politician may be persuaded to listen. He might even be brought to the point of transferring to syphilis control some of the money now spent on more purely political or less productive purposes.

If the health official's job depends on partisan politics, of course his situation is well nigh hopeless. If, however, his tenure of office depends on the efficient performance of his duty, he should certainly have courage enough to appraise the syphilis problem in his community, to determine how much money is necessary to deal with it properly, and to attempt to get the money. It is his job to point out that syphilis control promises more of immediate and ultimate community benefit than some other more purely cultural or mayhap political item.

I realize fully how presumptuous it may be for one who is neither public health officer nor political official in charge of government to attempt to appraise the relative value to the community of various items in the municipal, state, or national budget. In Baltimore, however, out of a total expenditure of 43 million dollars for 1934, the appropriation for the Health Department is only $686,000 (1.6 per cent), and within that appropriation, the allocation of funds to venereal disease control is only $39,000. This relatively insignificant sum is inadequate to permit the treatment of all applicants at the overcrowded city clinics, so that, in order to keep within its budget, the Health Department has been forced to accept only those cases which are actually or potentially infectious, and therefore a menace to the public health. Only the following categories of patients are now acceptable: those with primary or secondary syphilis, those with early latency (*i.e.*, infections of less than 3 years duration), or, if no history of infection is obtainable, women under the age of 40 (because still within the childbearing period), and men under the age of 25 (because presumably infection has been relatively recent).

The result of this policy (which, from the point of view of the Health Department and its budgetary restric-

tions, I must defend, since I assisted in framing it) is that the treatment of practically all patients in Baltimore with late—and especially latent—syphilis is thrust upon the shoulders of 6 clinics run by one state hospital and 5 privately endowed hospitals. Only 2 of these 6 clinics are large. Their facilities are utterly unequal to the burden; patient after patient with late or latent syphilis must be turned away with some such statement as: "You have syphilis and should be treated for it. We are unable to accommodate you here; the city makes no provision for your care; your only chance to be treated is either to pay a private practitioner or (since this is usually impossible) to tell the mayor or your city councilman of your difficulty and to request relief." It was estimated that this situation could be corrected, and treatment facilities provided which would ultimately have saved the city or state the cost of many hospital bed days through the prevention of progression or relapse in treated patients, by the additional expenditure through the Health Department of $10,000 yearly; yet this sum of money could not be obtained!

Let us assume that the public health officer in drawing up his budget has assigned to syphilis the major importance it deserves, that he is willing to emphasize this item in his dealings with the budgetary authorities, and that he is successful in selling the idea of its essential nature—how can the funds thus secured be best employed to reduce the incidence of the disease? No amount of thought would enable me to put the remedy more succinctly than it has been put by Parran:[1]

> In principle, the whole problem of the control of the venereal diseases comprises just two elements; first, every infected person must take treatment promptly after infection, and second, facilities for diagnosis and treatment must be made available and must be utilized. These two administrative factors are self-explanatory.

The problem may be stated from a different viewpoint in terms of basic principles:

Legal aspects of the public health program should include: notification of cases, particularly lapsed cases; notification of sources of infection; authority to examine contacts; quarantine of irresponsible patients after other efforts have failed.

Medical services to insure early diagnosis and complete treatment should comprise laboratory diagnostic facilities, including dark-field examinations, adequate clinical services on a full payment, partial payment, and free basis; free distribution of drugs as necessary, to physicians as well as to clinics; payment of physicians in rural areas and small villages for treatment of those unable to pay; and early preventive treatment after exposure.

Epidemiologic measures should include intensive inquiry in every early case both in clinic and private patients, to determine the source of infection; examination of contacts in families and elsewhere; and concentration of effort where necessary on early infectious cases.

Medical social service and nursing assistance should be available to physicians as well as to clinics for the purpose of assisting family adjustments, of making visits to the home, of returning lapsed cases for treatment, and of persuading contacts in homes and elsewhere to be examined and if infected to seek treatment.

Education should include training of the necessary public health personnel; physicians, nurses and social workers; better training of private physicians by undergraduate and post-graduate education and part-time service in clinics; education of the public by every available method, including education of special groups in prophylaxis; and specific training of the patient.

On certain of these items, I as a clinician lay particular stress. As to notification of cases, it seems to me highly desirable that a uniform system of reporting the venereal diseases be adopted throughout the registration area of the United States; that the persuasive prestige of the U. S. Public Health Service be brought to bear upon state and municipal health departments in an effort to secure such uniformity; that this system safeguard the identity of the patient by avoidance of the use of name and address; and that its observance be repeatedly and constantly urged

upon practitioners through frequent bulletins issued by health departments. Could this be accomplished—and surely it would cost relatively little—we should at least have a clearer idea of what our problem is, and what impression we are making upon it.

Such legal measures as are involved in the prevention of delinquency and the suppression of commercialized vice are not properly part of the public health officer's duty nor chargeable against his budget. Nevertheless, his intelligent interest and coöperation with the proper agencies of law enforcement may be of far reaching influence, with no expenditure other than of his time.

The provision of adequate medical services is the crux of the situation. I have already said that although we have had available for a decade or more the means of dealing with the syphilis problem, they are not being applied, and that the fault lies squarely on the shoulders of the medical profession. There is, I think, no use in blinking the fact that, by and large, syphilis is badly managed by the average practitioner, and that, by and large, the service provided in the average venereal disease clinics, whether run under public health or private auspices, is not much better. In private practice, the faults are of both omission and commission. Even when outspoken lesions are present, syphilis is often erroneously diagnosed because of failure to do a Wassermann test. There is little or no concerted effort to detect the latent syphilitic (who is at least potentially a carrier) by means of routine Wassermanns. Why this should be when free Wassermann service is so amply provided by health departments generally is a mystery. When syphilis is recognized, it is usually poorly treated; there is little or no effort to determine the source of infection or to examine contacts. Clinic service is better than this in some respects, but fully as poor in others.

As I have already said, the reasons seem to me to be two: actual lack of knowledge on the part of the medical profession on the one hand; and whether or not this is present, inability or lack of desire on the part of patients to carry through with the necessary examinations and treatment because of the vastly important economic factor.

How can we improve the standard of knowledge of the medical profession, and if it can be improved, in what way can public health officials be of aid in this connection? Education begins, of course, in medical schools. A recent survey by the American Social Hygiene Association of the facilities available for teaching syphilis to medical students in the seventy-some schools in the country[5] disclosed that in many of them these facilities, or the amount of time devoted to them, are woefully inadequate. Perhaps it might not be amiss if the public health authorities, beginning with the U. S. Public Health Service and extending downward to state, county, and municipal public health services, were to outline to the deans of the several schools the magnitude of the problem in the country at large and in their several communities, and to urge that the facilities for teaching syphilis to students be expanded or more largely utilized. Assuming, however, that with public health and other pressure the instruction of students could be brought up to a uniform standard of excellence, it would require a generation for this improvement to make itself felt in practice. We want quicker action than this.

Quicker action may be obtained, of course, only if the standards of physicians actually in practice can be improved, and if patients with syphilis can be brought into the hands of the physicians. Let us consider these points. The overwhelming majority of practitioners are beyond the reach of formal medical education. There are,

so far as I can see, only two ways in which knowledge can be imparted to them. The first, through medical journals and medical meetings, has been tried and found wanting. The syphilologists of the country have done and are doing their part; indeed, some of us have written and talked so much as to have been diagnosed as afflicted with *diarrhea ex oribus*. Nevertheless, efforts along these lines should be both continued and expanded.

The second is a method which has so far hardly been tried, but in which public health officials themselves should figure largely. The health officer is *par excellence* the physician who is in constant contact with every other physician in his community. He bombards us monthly, weekly—nay, sometimes daily—with bulletins as to infantile diarrhea, measles, undulant fever, etc.; he has been responsible for inaugurating the wholesale immunization of children against diphtheria, scarlet fever, and even tuberculosis. In Baltimore, in the monthly bulletins sent out by the Health Department to every physician, syphilis (or the venereal diseases) were allotted 9 pages of space out of a total of 234 pages during the past 2½ years, as contrasted with 11½ pages for the vastly less prevalent and less serious but socially more appealing diphtheria.

Let the public health officer now recognize that syphilis is his major infectious disease problem. Let him add to his bombardment a steady stream of literature urging the more widespread use of free Wassermann service, of free arsphenamine when it is available. Let him teach us, with constant repetition of short summaries, such accepted procedures of treatment as those advocated by the Coöperative Clinical Group, how to use drugs in treatment, the desirability of epidemiological study of each case, the reasons for spinal fluid examinations, for the examination and treatment of pregnant women. Let him realize that constant emphasis and repetition will accomplish educational results unattainable by a single address to a medical society, and that a program of this sort, if undertaken, should be kept up for years. Finally, let him clean his own house by making certain that his own syphilis clinics meet a minimum required standard of excellence, that the physicians employed in them are employed because they know something about syphilis, not because they need the job and happen to be friends of State Senator Doe. Let him offer, if local laws allow, his own clinics as instruction centers to practitioners, who may, by a few weeks' volunteer work, learn to handle the disease better (and incidentally more profitably) in their own patients.

Next, to face the problem of how to get the patient with syphilis into the hands of the presumably instructed physician or clinic. This involves, as I see it, two elements. It is essential to eliminate the quack advertising specialist and drug store treatment. Where laws permitting such action exist, they should be utilized; where they do not exist, their legislative passage should be urged by every possible means. Suppression of quackery is capable of accomplishment by legal means in an intelligent civilization: *vide* Denmark, which has had no quacks or cultists for more than 100 years; or even by extralegal means, as one dynamic health officer in a northern New York city discovered. More important than this, however, is to find some way of bringing together the physician and the infected person who does not know he is infected or who thinks that he has been cured as a result of previous inadequate treatment. Here there are several avenues of approach. One is the urging of the routine Wassermann test upon hospitals which do not now employ it, and upon physicians engaged in industrial medicine. The facilities of

health department laboratories should, if necessary, be offered for this service. Better still is an advertising campaign, carried on in toilets, rest rooms, trains, hotels, industrial plants, similar to that sponsored for a brief period during the war by the Army, Navy, and the United States and local Public Health Services —and under the stress of war emotion accepted without criticism by the medical profession, only to be dropped at the war's end. It is even desirable, I believe, to utilize newspaper advertising in a fashion similar to that of the Public Health Institute of Chicago, though I think that the initiative in this respect should come from a combination of the local health officials and the local medical society. It is unanswerably true that, stimulated by such advertising, many infected persons with early and latent syphilis seek medical advice and attention, who otherwise would come into the hands of the physician, if at all, only after serious late lesions had developed. How many individuals are saved from infection by these patients, or how much money is saved by the prevention of progression through treatment, can only be conjectured, but to anyone familiar with wartime conditions throughout the country, or with the present local situation in Chicago, the saving in both respects would be obviously enormous.

To inject the note of profit into a discussion of medical practice is a heinous sin, the enormity of which I realize. And yet, money, or its lack, is the rock on which even the best instructed medical profession splits in the practical management of the syphilis problem. It is hardly necessary to point out that the treatment of syphilis is expensive, and that, even at depression fees, the minimum cost in private practice of the management of an uncomplicated early case is not less than $200, and more likely $350. It is estimated that even in normal times, only 20 per cent of the infected population can afford to pay for the adequate care of syphilis at the usual private rates; perhaps an additional 50 per cent could meet the cost of care at a pay clinic; and that fully one-third must receive treatment free or for nominal amounts.

As to the 20 per cent under treatment in private practice, would it be amiss to point out to the practitioner that the economic is as important as the medical aspect in planning treatment for the syphilitic patient; that if the patient has only $100 in all, it would be better for him to go to a free or part-pay clinic at the start rather than after having spent the whole $100 on 6 weeks of treatment when he needs continuous care for a total of 18 months; that to compensate for the loss of this $100 revenue, the practitioner might make up as much or more again if he actually looked for more frequently—and found, as of course he would—syphilis in his more well-to-do clientèle? Would it be amiss to suggest that more frequent use of the routine Wassermann would at one time serve the public health aim of uncovering and bringing under treatment the unsuspected syphilitic and the personal aim of improving his own income?

For the 50 per cent who can pay part or all of the actual cost of treatment, but not including a profit for the physician, such facilities as now exist are almost wholly for the lowest incomes of the group. There are many hospital clinics at which treatment is available for a charge of $.25 to $1 per visit. Most of these are run on the mass treatment plan, with no privacy, with intermingling of the sexes and races, and under circumstances so distasteful to the more gently born patient as to preclude his regular attendance. For the individual who can afford something better than this, but who is not quite up to the minimum average fee of private practice, there are, with only

three or four exceptions, no facilities whatever available in this country. Such patients are faced with the alternatives of abandoning treatment at private hands because of inability to pay for it, or of accepting the long waits, the hurried attention, the personal indignities of the average part-pay or free clinic. The Public Health Institute in Chicago has blazed a trail which the rest of the medical profession has so far been loath to follow. It has provided first-class professional attention under conditions resembling private practice at a cost level below the minimum attainable in private practice, and yet it has been able to operate either at a profit or at only a small loss. Such clinics should be available in every large center. When possible, they should be conducted under the joint auspices of the local medical society and a large general hospital. They are, of course, anathema to many practitioners, who fear loss of income; but have we not reached a stage in the syphilis problem where considerations of the private practitioner's income are secondary to those of the public health?

Finally, the free clinic services of the country should be largely expanded. In Baltimore, the only clinics which provide completely free treatment are those run by the Health Department. At the general hospital clinics, that run under the auspices of the University of Maryland Hospital (a state institution) is almost entirely pay, a curious and anomalous situation; while that at the Johns Hopkins Hospital is about 70 per cent free and 30 per cent small fee. The city clinics and the Johns Hopkins clinic are completely unable to deal with the problem of the indigent syphilitic with their present facilities; many patients must be turned away without any treatment at all! This is an appalling situation, which cannot be allowed to continue. Money must be found to treat every syphilitic patient, whether or not he can afford to pay for it himself. This is a civic responsibility which cannot be dodged. Health officers must familiarize themselves with the needs of their communities and must obtain the necessary funds. If unsuccessful single handed, they must invoke the aid of prominent physicians and laymen in bringing to bear the pressure of enlightened public opinion.

What is the community cost, the burden to the tax payer, if the urban health department establishes a division of venereal diseases adequate to provide for Wassermann service to physicians, and free clinic service to all indigent syphilitic patients, whether infectious or not? So far as syphilis is concerned, and leaving out of consideration the cost of care of the frequently associated gonorrhea or chancroid, it is estimated that such a department may be efficiently run for an average cost of $.60 per patient visit. This estimate includes salaries for administrative and professional personnel, nursing, clerical and social service, the overhead cost of laboratory and clinics, and the cost of drugs and supplies. While it is quite impossible to set definite figures for the average amount of treatment to be given to patients in such widely divergent conditions as seronegative primary syphilis and tabes dorsalis, it is certain that the average patient will not receive more than a total of 40 treatments. Taking this figure, which is probably optimistically high, as the average, and assuming that this amount of treatment is given within one year, the cost per patient per year is $24. In Baltimore, a city and suburban area of approximately 900,000 people, it is further estimated that there are discovered each year about 9,000 new cases of syphilis, early or late: that approximately 1,800 of these are treated by private physicians, and 3,600 (half of the remainder) at clinics other than those of the Health Department. To manage adequately the re-

maining 3,600 (which at present is not being done) would cost the community $86,400, in place of the $39,000 now expended. If no privately endowed clinics existed and the entire burden of clinic service were thrown on the community, this figure would be nearly doubled. For the benefit of health officers generally, it is perhaps better to express the probable cost in terms of units of 1,000 syphilitic patients to be treated. The fewer the patients, the higher the cost, because of increased overhead; but I believe that a community cost of $25,000 per year per 1,000 patients is adequate to provide ample treatment facilities. It is to be noted that this estimate is far below that supplied by Parran in the 1932 *Report of the New York State Health Commission.*[7]

The Medical Society of the District of Columbia has appointed a subcommittee to consider the local venereal disease problem and this committee has submitted a preliminary report [8] which has been unanimously approved by the membership of the Society. This report, while it refrains at present from making any definite recommendations, clearly suggests in what direction those recommendations when made will be. The report discusses all of the shortcomings of our present haphazard system set forth here and says:

> From all of the evidence at hand your committee does not see how we can escape the conviction that this . . . matter must be placed in the hands of the state, so that it can, with the assistance of the medical profession, apply the knowledge already in the hands of the profession to put this disease (syphilis) under control just as it has done other epidemic diseases and just as it would have done with syphilis long ago, had it been an acute infectious disease, instead of a chronic one. Has any plan, short of State control, been successful? The answer is "No." Has any State control plan been successful? The answer is clearly "Yes."

This comment refers, of course, to the enormous reduction in syphilis morbidity accomplished particularly in England and in Denmark; and brought about, it is believed by competent observers, by the nation-wide adoption of one single measure—free treatment for all patients with venereal disease regardless of their ability to pay.

While I am willing to agree with the Washington Committee that all plans of syphilis control so far tried in this country have failed, I am not yet prepared to admit that the medical profession cannot drag itself out of the morass of failure. To do so, however, we need to end the conspiracy of silence among ourselves and with the laity. We need to raise our heads, plunged ostrich-like into the sands of concealment; to bring our problem out into the open; to talk about it among ourselves and with the intelligent laity, not only as a potentially crippling and fatal disease (the spread of which menaces every one of us), but also—since the average individual does not greatly fear physical disaster in the remote future—in terms of dollars and cents. Where the tax payer refuses to become alarmed as to the possibility of his own blindness or insanity 20 years hence, he will wince with pain at an increase in the figure in the lower right hand corner of his tax bill. He can be made to see that $1,000 spent on the control of infectiousness in syphilis will ultimately save 10 times as much. The public health officer is the physician who must take the lead in breaking down this conspiracy of silence. I believe that he will find the bulk of the medical profession ready and anxious to help him.

In so far as syphilis control is concerned, we are faced with a situation in which we must improve our status both as physicians and as economists. We must effect not only a widespread betterment in the way in which the disease is managed but also in the way in which that management is paid for. Unless we are equal to both of these

tasks, there remain but two alternatives: to continue the conspiracy of silence, to make no progress in the control of the major infectious disease problem; or, by the breaking down of the conspiracy and the awakening of an enlightened public opinion, to see the problem taken from our hands and given over to those of the State. Perhaps one of these two alternatives, both distasteful to all physicians, is inevitable. The effort to avoid them, led by public health officials, is worth the trial.

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The President's Committee on Economic Security Appoints a Hospital Advisory Committee

THE Committee on Economic Security of which the Hon. Frances Perkins, Secretary of Labor, is chairman, and Secretary Wallace, Secretary Morgenthau, Attorney-General Cummings, and the Hon. Harry L. Hopkins, director of Federal Relief, are the other members, has asked the following hospital authorities to act as an advisory committee on hospital problems:

Dr. S. S. Goldwater, F.A.P.H.A., Commissioner of Hospitals, New York City.

Dr. Frederic Washburn, Director of Public Institutions, Boston.

Dr. W. S. Rankin, F.A.P.H.A., Director of the Duke Foundation, Charlotte, N. C.

Dr. Arthur C. Bachmeyer, Member A.P.H.A., Cincinnati General Hospital.

Dr. Robin C. Buerki, Wisconsin General Hospital, Madison.

Dr. Michael M. Davis, F.A.P.H.A., Julius Rosenwald Fund, Chicago.

Rev. A. J. Schwitalla, President, Catholic Hospital Assn., St. Louis.

Rev. C. C. Jarrell, President, Protestant Hospital Association, Atlanta.

Mr. Robert Jolly, President, American Hospital Association, Houston.

Dr. J. Rollin French, President, Western Hospital Association, Los Angeles.

Dr. Winford H. Smith, Director, Johns Hopkins Hospital, Baltimore.

Dr. N. W. Faxon, Director, Strong Memorial Hospital, Rochester.

This committee met in Washington on November 20, and an outline of some of the important subjects was presented by representatives of the Committee on Economic Security for the study and counsel of the Advisory Committee. The work of this committee will be of very large value to the entire hospital group, and future plans and future legislation looking to the important problems of hospital care, hospital support, and hospital development will be very carefully considered and such recommendations will be made to the Committee on Economic Security as a close and detailed study of these and other problems will warrant.—*Bull. Am. Hospital Assn.* VIII, 12 (Dec.), 1934.

Natural Immunization to Diphtheria in an Institution*

C. C. YOUNG, D.P.H., F.A.P.H.A., G. D. CUMMINGS, PH.D., F.A.P.H.A., AND M. E. WILSON, M.D.

Michigan Department of Health, Lansing, Mich.; and Michigan Home & Training School, Lapeer, Mich.

PREVIOUS diphtheria studies on institutional populations [1, 2] have indicated that a careful study of admission patients would be profitable.

We have observed two groups of patients in the Michigan Home and Training School for 1½ years to determine what effect herding might have upon immunity experience. Records of Schick tests, throat swabs, and blood antitoxin titers have been kept on both groups throughout the observation period.

The first series included 176 patients who had been admitted from 1 to 6 months before observations began. These patients were Schick tested and the antitoxin content of their bloods determined by the Fraser [3] modification † of the Römer test. Schick positive reactors were divided into three groups. The first, or test group, was not immunized; the second and third groups were treated with a sub-standard toxoid ‡ and a standard toxin-antitoxin mixture respectively. Three doses, a week apart, were given. The three groups, together with their Schick negative controls, were Schick tested, swabbed, and tested for antitoxin at 3 and 9 months after the last dose of antigen.

Observations were made on a second series of 213 patients within 1 month of admission so that institutional influences could be reduced to a minimum. These patients were Schick tested, swabbed, and bled for antitoxin determinations on admission, at 3 and 6 month intervals.

Our studies have revealed the following points:

1. The number of Schick positive reactors in the unimmunized groups was definitely reduced over the test periods and the reduction compared favorably with the reduction in the toxoid group, but not in the toxin-antitoxin group.
2. There were fewer Schick positive reactors than there were patients with blood titers of 0.01 units or below of antitoxin per c.c. at the beginning of the observations.
3. There were a number of Schick negative reactors with 0.002 units or below of antitoxin per c.c. of blood at the beginning of the observation, whose titers were increased at 3, 6, or 9 months.
4. The Schick test behaved as an antigen in some of these Schick negative reactors by raising their blood titers to a level comparable with the negative test.

REDUCTION OF THE NUMBER OF UNTREATED OF SCHICK POSITIVE REACTORS

The number of positive reactors in the test group of the first series was

* Read before the Laboratory Section of the American Public Health Association at the Sixty-third Annual Meeting in Pasadena, Calif., September 6, 1934.

† Blood sera were tested at four levels, namely, 0.002 units, 0.01 units, 0.05 units, and 0.1 units. Throughout this paper the phrase "or below" means to the next lower level.

‡ Diluted toxoid 6–7 flocculation units per c.c.

reduced by 35 per cent in 9 months. The number in the toxoid group was reduced 50 per cent, and in the toxin-antitoxin group 89 per cent during the same time. The number of positive reactors in the second series was reduced 29 per cent in 3 months, and 39 per cent in 6 months. The results for both series of untreated individuals were therefore comparable. Environmental influence plus the Schick test appeared to be nearly as efficient as the toxoid immunization, but only one-half as efficient as the toxin-antitoxin immunization.

The blood antitoxin titers of those patients whose Schick tests changed from positive to negative increased. There were 19 Schick positive reactors with 0.002 units or below of antitoxin and 3 with more than 0.1 units per c.c. at the beginning of observation. In 3 months, 8 of 22 titers measured more than 0.1 units of antitoxin per c.c., 2 were 0.01 units or below, and 5 were 0.002 units or below. All titers above 0.002 units, and 2 of the 5 0.002 units or below correlated with negative Schick tests. The 3 remaining titers of 0.002 units or below, remained unchanged at 6 months, but the Schick tests became negative.

The 3 patients with initial positive Schick tests and more than 0.1 units of antitoxin retained the same blood titers for the whole observation period. However, the Schick tests of all 3 were negative at 3 months, but again positive at 6 months.

TABLE I

CHANGE IN ANTITOXIN TITER OF SCHICK POSITIVE PATIENTS WHO BECAME NEGATIVE IN 3, 6 OR 9 MONTHS

	0.002 Units or Below	0.01 Units or Below	0.05 Units or Below	0.1 Units	More than 0.1 Units	Missed
Initial	19				3	
3 Months	5	2			8	7
6 Months	3	1	1	1	1	3
9 Months		1	1		4	2

TABLE II

INITIAL POSITIVE SCHICK TESTS AND BLOOD ANTITOXIN TITRATIONS

	% Schick Positive	% 0.01 Units or Below
Series 1	33.2	38.1
Series 2	35.7	51.0

COMPARISON OF INITIAL POSITIVE SCHICK TESTS AND BLOOD ANTITOXIN RESULTS

The level at which the Schick test should be positive was taken to be 0.01 or below units of antitoxin per c.c. so as to represent a level of actual measurement. This level is admittedly lower than that commonly accepted (0.03 units). However, it will be seen in Table II that the disagreement between the Schick test and antitoxin titrations would have been even greater if a level of 0.05 units or below had been selected. The difference recorded is therefore conservative. The difference in percentage in the first series is small enough to be statistical, but that in the second series clearly indicates that there must have been a number of Schick negative reactors with 0.01 units or below of antitoxin.

INITIAL NEGATIVE SCHICK TESTS WITH 0.01 OR BELOW UNITS OF ANTITOXIN PER C.C. OF BLOOD

Forty-four, or 11.3 per cent, of the 389 patients observed were Schick negative with 0.01 units or below of antitoxin.* All of the Schick negative reactors were still negative at 3, 6, and 9 months, but in 86 per cent of the cases, blood titers had increased markedly at 3 months.

The fact that the Schick test might serve as an antigen was kept in mind throughout this study. When Schick negative reactors with as little as 0.002 units of antitoxin were encountered, it became necessary to determine the part which the test played in the rise in blood titers.

TABLE III

CHANGE IN ANTITOXIN TITER OF SCHICK NEGATIVE PATIENTS WITH 0.01 OR BELOW UNITS OF ANTITOXIN PER CUBIC CENTIMETER OF BLOOD

	0.002 Units or Below	0.01 Units or Below	0.05 Units or Below	0.1 Units	More than 0.1 Units	Missed
Initial	29 6	9				
3 Months	3 2	1	5 4	2 3	15 5	3 1
6 Months	3		6	1	12	7

NOTE: Figures in upper right hand corner represent patients observed at 3 and 6 months. Figures in lower left hand corner represent patients observed at 3 months.

THE ANTIGENICITY OF THE SCHICK TEST

Blood samples were drawn immediately before the Schick tests were administered. Blood titrations were completed before the Schick tests were read and, where possible, additional blood samples were taken at the time of reading. Blood antitoxin titers of 18 patients were determined at the time the Schick tests were administered and when read. Fourteen of 18 individuals showed increases in blood titer between administration and reading. Ten of the 14 showed titers above 0.05 units or enough to agree with the Schick negative readings. In 55 per cent of the cases, therefore, the Schick test itself appeared to be responsible for the negative results. Furthermore, the effect of the test could not be considered temporary because 17 of the 18 patients tested above 0.01 units at the next test.

TABLE IV

CHANGE IN BLOOD ANTITOXIN TITERS BETWEEN TIME OF ADMINISTRATION AND READING OF NEGATIVE SCHICK TESTS

	0.002 Units or Below	0.01 Units or Below	0.05 Units or Below	0.1 Units	More than 0.1 Units	Total
Administration	14	4				18
Reading	4	4	8		2	18

DISCUSSION

It is well known that Schick positive reactors may become Schick negative in a diphtherial environment. Dudley [4] has reported a 32 per cent reduction of Schick susceptibles in 3 months in a boys' naval academy in England. This corresponds with the percentage reduction reported here. Dudley found that there was a direct relationship between the number of Schick negative reactors in a group and their epidemic experience. Thus, those students who were present in the academy through two diphtheria epidemics were more Schick negative than those who had been exposed to only one. Both groups were more Schick negative than students on admission. His results indicated that

* The same Schick test toxin and Schick test control were used throughout the study. The Schick toxin was retested to assure us that Schick negative results were not due to impotent toxin. Blood sera with low titers on these Schick negative individuals were repeated to check the first results.

herd immunization took place only when diphtheria was present in epidemic proportions.

Diphtheria has not been epidemic nor even endemic in the Michigan Home and Training School since 1920, so that the environment of the two schools cannot be compared. The population of the school has been artificially immunized with the exception of the patients reported here.[1] The diphtheria bacilli isolated from patients hospitalized with septic sore throat, Vincent's angina, and from our concurrent throat cultures have been of low virulence or avirulent. This indicated that possibly herd immunization was taking place continuously through the medium of organisms of low grade virulence which had lost their ability to cause clinical diphtheria.

The carrier rate for the school has not been determined since 1920 (1.9 per cent). All patients are hospitalized upon admission, and routine throat swabs are taken. It is, therefore, possible to determine carrier rates for admission and hospitalized patients. In 1932, 3.5 per cent of hospitalized individuals (including admissions) were carriers, while the rate for 1933 was 2.9 per cent. These rates were probably lower than those for the whole institution. Dudley[2] has shown that 40 per cent of a group of boys were carriers for short intervals over a period of a year, while the carrier rate was 6.9 per cent, indicating that the rate does not measure the total of individuals infected over a given period.

Diphtheria bacilli were found in the throats of 2 untreated Schick positive individuals whose test eventually became Schick negative. We observed a third individual whose negative Schick test coincided with the presence of diphtheria bacilli in the throat. There had been 3 positive Schick tests at 3 month intervals before hospitalization. Five months after the last positive test, this patient was committed to the hospital with a sore throat. The virulence pig did not die, but there was some evidence of a toxemia. The Schick test was negative. Diphtheria bacilli were not isolated from the balance of the patients whose Schick tests became negative.

We did not anticipate the discovery of the Schick negative reactors with less than 0.002 units of antitoxin. It was not possible to explain the presence of such small amounts of antitoxin in terms of herd immunity. The fact that the Schick test stimulated antitoxin production in certain of these individuals helped to keep the results obtained on a sound basis and indicated the immunological behavior of such a group in the presence of diphtheria. Their response to a given antigen would be so rapid that the emergency could be easily handled.

The effect of the Schick test on the antitoxin titer of Schick negative reactors suggests that the change from the Schick positive to the Schick negative state might be accomplished in the same manner. Would it not be possible for the Schick test or a series of Schick tests to cause a rise in blood titer which would result in a negative test? Glenny[5] has indicated the marked effect of the secondary stimulus in the production of antitoxin. It seems more reasonable to assume that the primary and secondary stimuli have been supplied by diphtheria bacilli of some virulence and that a Schick positive individual might then become negative in response to a low grade infection or to a series of Schick tests. This type of Schick positive individual would fall into the group designated by Glenny[5] as the Schick positive immune, that is, an individual whose response to an antigen was secondary with a rapid rate of immunization. It is our intention to study a group of individuals by observing blood antitoxin titers uninfluenced by the Schick test. A rise in

blood titer would then be directly attributable to environment.

It will be recalled that the toxin-antitoxin mixture appeared to have twice the immunizing power of the toxoid. The interpretation of these results must be qualified by the knowledge that a certain number of individuals would have become Schick negative without treatment. This in turn indicates that certain individuals are easier to immunize than others and that a preponderance of this type in one group and not in the other would radically alter the end results. We would then have to credit the individual and not the antigen. Quoting Glenny [5]: "Such a statement as 'a single injection of a given antigen has rendered a man Schick negative in 6 days' is to be put to the credit of the man probably more than that to the antigen." The Schick positive reactors who became Schick negative in the series reported, did so over a relatively short period. If the effects of herd immunization are such that a certain number are easily immunized while the remainder are only immunized through diphtheria or artificial immunization, then it is logical to assume that this remainder might serve as an excellent group for the comparison of antigens.

SUMMARY

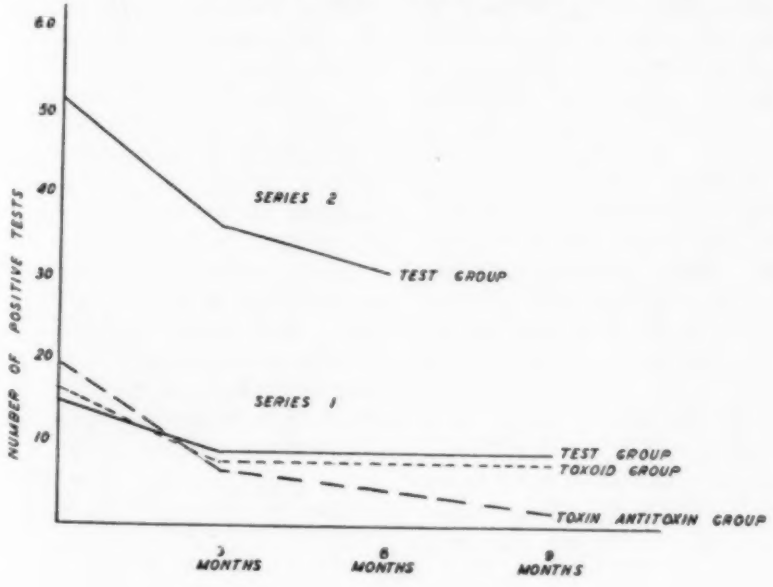
At the Michigan Home and Training School at Lapeer 389 patients have been observed by means of the Schick test, throat swab, and blood antitoxin titration at 3, 6, and 9 month intervals for evidence of herd immunization.

The number of Schick positive reactors in two series of patients was reduced 32 per cent at the end of 3 months without treatment.

Of 389 patients 11.3 per cent were

CHART I

REDUCTION OF SCHICK POSITIVE REACTIONS FOLLOWING HERD OR ARTIFICIAL IMMUNIZATION



Schick negative, with 0.01 units or below at the beginning of the observation. Eighty-six per cent of the blood titers in this group had increased in 3 months.

CONCLUSIONS

The number of Schick positive reactors in a group is reduced by herd immunization over a relatively short period. A certain number of individuals exist whose antitoxin titer is too low to agree with their negative Schick test. These have the ability to respond rapidly to diphtherial antigen.

A comparison of artificial antigens should be carried out upon a group of Schick positive reactors with similar diphtherial history.

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Wallace Will Fight for New Food and Drugs Bill

IN his annual report to the President —a document modest in size as judged by usual Government standards, consisting of only 119 pages—Secretary Wallace breaks the news that he, Professor Tugwell and others will enter the ring once more during the coming session of Congress in an effort to secure the enactment of a new food and drugs act. This is not exactly a surprise, a semi-official announcement to the same effect having been made in *Printers' Ink* [Dec. 6].

But it is interesting as showing the Secretary's line of reasoning and indicating to merchandising interests that, whether they like it or not, some sort of bill is reasonably sure to be made law. . . . —*Printers' Ink*, Dec. 13, 1934.

Sources and Modes of Infection in Two Family Outbreaks of Syphilis*

A. L. GRAY, M.D., AND W. H. CLEVELAND, M.D.

Epidemiologist, Mississippi State Board of Health, Jackson; and Health Officer, Lee County, Tupelo, Miss.

ACCORDING to Rosenau, syphilis was unknown before the year 1493. Within a few years after that date, it had an astonishing spread over the known world. It has continued its spread, retarded but little in its progress, in the human races. This, the great imitator, has been one of our greatest causes of suffering and an important cause of death.

Its clinical manifestations are well known, and the tremendous progress with regard to the treatment of the disease has been made within the present century. The social problems need no particular discussion. It is unfortunate, however, that this disease is too often thought of by both physicians and laymen as a venereal disease; and it is also unfortunate that treatment and the handling of the case is often clouded by the moral connotation attached to the word venereal. It would be far better if the common name for syphilis were greatpox and it were handled, at least from the point of view of the investigation of the source, as smallpox is handled. Too many of us as physicians have been content with reporting the case and then getting it under treatment, without being concerned with the possible source of this individual case, and with little thought to future cases of which the one under consideration may be the source. Consequently, epidemiological investigations are rarely followed through in the hope of preventing further spread of the disease.

That this disease lends itself to the finding of sources of infection in the form of missed as well as known cases even more readily than does typhoid fever and other communicable diseases, is agreed to by many authorities. It is true that much less has been accomplished in dealing with it as to locating sources of infection than in the case of some other communicable diseases.

This paper is presented to call attention again to some of the sources and modes of infection of syphilis, and as an illustration of what may be accomplished in an epidemiological study of cases as they present themselves to physicians and health workers. The sources and modes of infection in the 2 family outbreaks as related below should recall to our minds that this disease has other methods of spread than through sexual intercourse and congenital acquisition, which may and probably often do play a major part in the propagation of the infectious agent within a family or community.

FAMILY OUTBREAK NO. I

In October, 1933, while making school inspections, the attention of the county health officer of Lee County, Miss., was called to a boy of the R.

* Read before the Epidemiology Section of the American Public Health Association at the Sixty-third Annual Meeting in Pasadena, Calif., September 3, 1934.

family with an eruption. He was attending a rural school at the time. Upon examination, he presented what was apparently a typical generalized secondary syphilitic eruption. Communication with his parents resulted in a visit by the R. family to the office of the health officer. A study of the situation revealed that 6 of 10 members of this family had syphilis, the diagnosis of each case being confirmed by a blood Wassermann. Before the mode of entry of the infection into this family was determined, the father and mother accused each other of breaking the marital contract. When the investigation was completed, the following picture was gotten together:

In the R. family, A. R., female, age 17, began having sexual intercourse with a neighbor boy D. H., in November, 1931. D. H. had been in the health department office in July, 1931, at which time he had a chancre on the penis. Blood Wassermann on D. H. at this time gave a 2+ reaction. At the time of investigating this outbreak, D. H. could not be found.

A. R. gave a history of having had intercourse with D. H. at frequent intervals beginning about November 1, 1931, and continuing until June, 1932. She denied having had intercourse with anyone other than D. H. She gave no history of having had a primary lesion except for a period of about 1 month. In April and May, 1932, she had burning on urination in what was apparently the posterior wall of the vaginal orifice. It is probable that this burning was at the site of the initial lesion although no physician saw it.

About August 1, 1932, she developed what was apparently secondary lesions in the form of mucous patches on the mucous membrane of the throat, tongue, and gingivae. These were present for about 2 months but were not observed by a physician.

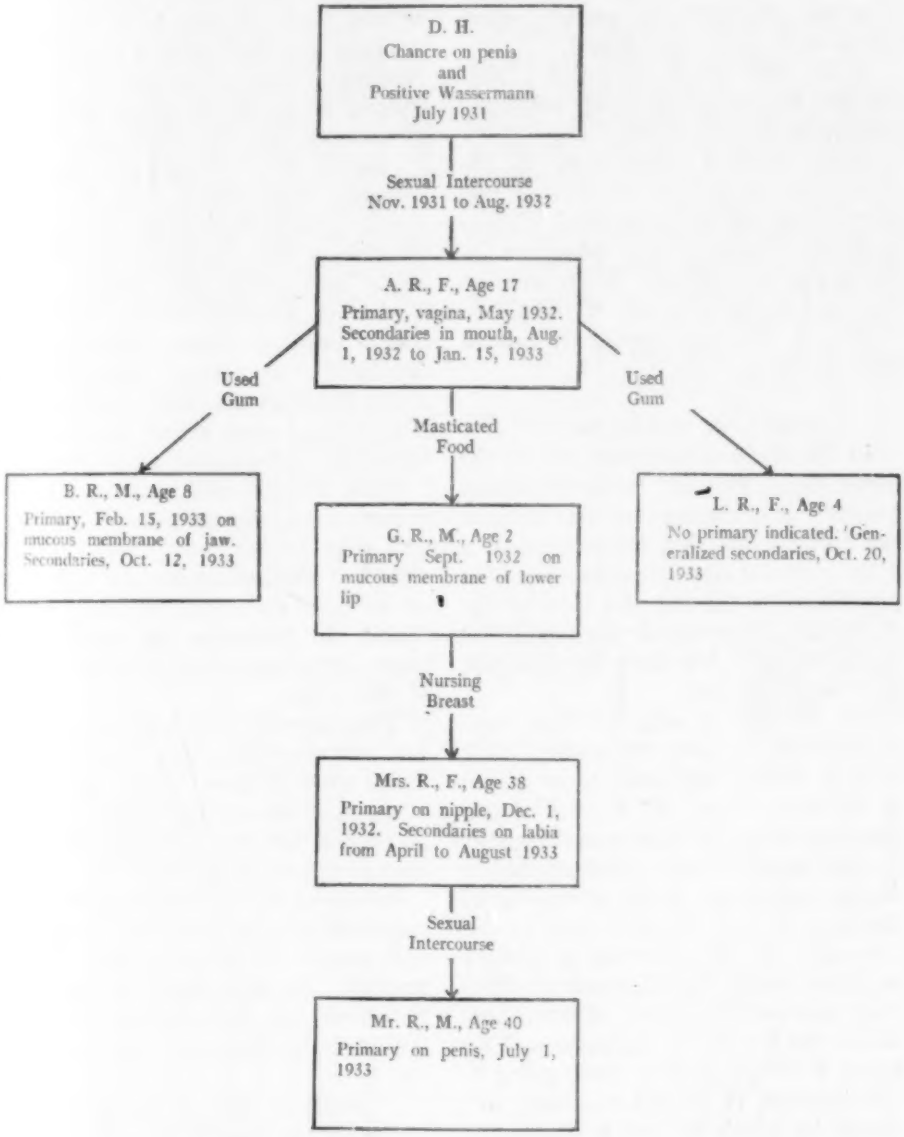
While A. R. had secondary lesions in her mouth, she masticated food and gave it to her brother, G. R., age 2, who developed a chronic sore on the mucosa of the lower lip about September 1, 1932, which persisted for 3 or 4 weeks. He developed a generalized eruption November 26, 1932. He was still nursing at the breast of his mother, Mrs. R., at the time of occurrence of the sore on his lip and continued to do so until about March 1, 1933. Mrs. R., age 38, developed a chronic sore on one of her nipples in November, 1932, which was about 2 months after the sore appeared on the lip of her baby, G. R. She was told by her physician that this lesion, which persisted until March, 1933, was probably cancer. In April, 1933, Mrs. R. developed chronic sores about her vagina and in her mouth, which did not heal until the latter part of August of the same year. She had no generalized eruption.

Mr. R., age 40, developed a chancre on the penis July 1, 1933. This began healing only after treatment was started in November. He developed no secondary lesions.

B. R., male, age 8, was the school child from whom the investigation started. A history was obtained to the effect that A. R., the initial case in the family, gave this boy some gum which she had been chewing, transferring it directly from her mouth to his mouth. This occurred while A. R. had secondary manifestations in her mouth, which was from August 1, 1932, to January 15, 1933. Beginning about February 20, 1933, and continuing for about 1 month, B. R. complained to his parents of having a sore on the mucous membrane of his cheek. At the time of the investigation, a scar about 1 cm. in diameter was observed at the site indicated as being the location of the sore which was at the level of coaptation of the teeth opposite the first molar. He developed a secondary generalized eruption October 12, 1933.

FIGURE I

ILLUSTRATION SHOWING SOURCES AND MODES OF INFECTION IN OUTBREAK NO. 1



L. R., female, age 4, gave no history of a primary lesion. However, she was also favored with some of the second-hand gum at the same time as her brother, B. R. She developed a generalized secondary eruption about October 20, only a few days after the secondary eruption became manifest in B. R. It is probable that she got her infection through the gum at the same time as her brother, B. R. A. R. stated that she divided the gum which she

was chewing, giving one portion to B. R. and one to L. R.

To demonstrate more vividly the sources and modes of infection in this outbreak of syphilis, a graphic representation is given in Figure I.

A. R., the initial case, had a miscarriage November 26, 1932, delivering a fetus of about 6 months.

There were 4 other boys in the family, 6, 10, 15 and 19 years of age, all of whom had negative blood Wassermanns in October, 1933, when the investigation was started. There were no clinical symptoms in any of these.

Mrs. R. delivered apparently normal twins in April, 1934.

FAMILY OUTBREAK NO. 2

In the study of Outbreak No. 1, the investigators were led to the D. family because the attending physician of these two families felt that the original of 3 cases in the D. family probably got his infection from D. H., who infected the R. family. However, it was found that D. H. did not introduce the infection into the D. family.

Mr. D. with 2 neighbor boys went to Arkansas in early September, 1932, to pick cotton, and while there stayed in the same home. C. F., one of this trio, had been seen a few months earlier by the physician who attended the R. family mentioned in the discussion of Outbreak No. 1. Upon coming to this physician, C. F. presented a primary syphilitic lesion, the diagnosis of which was confirmed by a blood Wassermann. While the 3 were in Arkansas and for about 2 weeks prior to their going to this location, C. F. had a chronic sore throat for which he used a local application. This was probably a secondary lesion, but no physician saw him and made that diagnosis.

During their stay in Arkansas, these 3 individuals shaved only on Sunday mornings, using the same razor in rapid succession. Upon one occasion, Mr. D. cut his chin slightly. He returned home early in October, and during the first 2 weeks in November developed a chronic sore at the site of the cut, which became about ½ inch in diameter and persisted for more than a month. On January 1, 1933, he developed a generalized eruption which was diagnosed as measles, but which persisted until 3 weeks later when anti-syphilitic treatment was started. Mr. D. vehemently denied having had any sexual association with anyone from whom he might have gotten the infection.

Mrs. D. gave no history of having had a primary lesion. However, she developed secondary manifestations about February 15, 1933, consisting of a protracted sore throat accompanied by lesions of the tongue and gingivae.

While Mrs. D. had secondary lesions in her mouth, she masticated food daily and gave to her baby, age 3. This child had what was apparently a chancre on the tip of its tongue, beginning about March 20. When the investigation was made, there was a large scar at the site of this lesion.

The diagnosis in each of these 3 cases was confirmed by a blood Wassermann. Three older children in this family had a negative Wassermann and had had no clinical symptoms of syphilis at the time of the investigation.

In both of these outbreaks some of the epidemiological evidence as to sources and modes of infection was circumstantial. All information obtainable at the time of investigation, however, indicated that they were as outlined.

SUMMARY AND CONCLUSIONS

Family Outbreak No. 1—Case No. 1 was apparently infected by a neighbor boy by sexual intercourse. She apparently transmitted the infection to her baby brother by feeding it food which she had masticated while secondary lesions were present in her mouth. This child, case No. 2, had a

chancre on its lower lip, and, by nursing at her breast, infected its mother, case No. 3, who developed a chancre on her nipple followed by secondaries in her mouth and vagina. Case No. 4 developed a chancre on the penis apparently getting the infection from case No. 3, his wife. Case No. 5 was apparently infected by case No. 1, his sister, by chewing gum which she had chewed, resulting in a chancre on the mucous membrane of his jaw. Case No. 6 also chewed some of the same gum at the same time as case No. 5 did, and developed secondaries at about the same time as case No. 5. No history of a primary lesion in this case was obtained.

Family Outbreak No. 2—Mr. D. was apparently infected through a cut by a razor used by a known case of secondary syphilis, a chancre developing at the site. Mrs. D. apparently became infected through sexual intercourse with Mr. D. She masticated food for her baby while secondaries were present in her mouth and the baby had the initial lesion on the tip of its tongue.

Active Immunization Against Poliomyelitis*

MAURICE BRODIE, M.D.

Bureau of Laboratories, Department of Health, City of New York, and Department Bacteriology, New York University and Bellevue Hospital Medical School, New York, N. Y.

THE problem that confronts the medical world concerning poliomyelitis is, What can be done for its prevention, or treatment in the acute stage, in the hope of warding off paralysis? In the treatment of the acute stage, we are no further advanced than when Heine described the disease as a clinical entity in 1840. In 1910, when Netter *et al.*[1] first announced that convalescent serum neutralized the virus of poliomyelitis, great hope was held that it had curative powers. Many reports have favored its use. However, as I have pointed out,[2a] several significant controlled studies have failed to uphold its value. Moreover, our own experimental studies on monkeys showed that large amounts of convalescent serum or whole blood had no appreciable effect upon the progress of the disease, even if given during the earliest stages. The reason for this is obvious from studies on the pathogenesis of the disease, which show that it is confined to and transmitted along the nerve tracts of the central nervous system[2b] by certain cells by which the virus is absorbed. This renders it highly improbable that the serum reaches the virus.

To prevent the epidemic spread of the disease by means of isolation is difficult, for it apparently spreads mainly through carriers and abortive cases. As judged by the results of Davide[3] and Brebner,[4] passive immunity obtained by the use of convalescent serum offered some hope, but a recent report from California does not seem to justify this. Moreover, the serum is expensive and the immunity, if present, lasts for only a few weeks. Therefore, in view of the present state of knowledge and the difficulty in controlling the disease by other means, a safe and effective active immunization of the susceptible age group offers the most hopeful means of combating it, especially if immunity can be produced rapidly.

Experience with other virus diseases points to 3 possible methods of immunization. The first of these is by the use of an active virus which, through adaptation to one species, is non-infective for another, yet gives immunity to that species. Perhaps the best example of this is vaccinia virus. The second is by a combination of virus and serum, using an incubated mixture of active virus and antiviral substance, *e.g.*, yellow fever vaccine; or giving virus and serum separately, as in the case of cattle plague. The third method involves the use of germicidally inactivated virus, as in the case of dog distemper, foot and mouth disease, cattle and fowl plague, and rabies. Heat killed virus

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has not proved satisfactory for the prevention of virus diseases.

In our experiments, the various methods of active immunization were investigated. *Macacus rhesus* monkeys were injected intracutaneously, in the abdominal wall, with the antigens. Some of the virus infiltrated into the deeper layer of the skin. Unless otherwise stated, a 10 per cent suspension of infective cord tissue was used prepared as previously described.[6, 8] Similar concentration of virus suspension and methods of inoculation were used in the human cases.

Immunity was tested for some 3 to 6 weeks later by inoculating virus intracerebrally into the treated animals, and by testing for antibody by the neutralization test, which consists of mixing 0.9 c.c. of the serum with varying amounts of virus, incubating for 2 hours at 37° C., and after 8 to 10 hours on ice, injecting intracerebrally into other monkeys. In all instances, the neutralizing power of the serum or the resistance to direct intracerebral injection was estimated in terms of M.C.P. (minimal completely paralyzing) dose, which consists of the smallest amount of virus-containing-tissue causing a complete and rapid paralysis in *Macacus rhesus* monkeys weighing from 2.5 to 4 kilos, within 13 days after intracerebral inoculation of virus.[5]

Since the monkey is the only known experimental animal that is susceptible to the virus of poliomyelitis, one cannot determine whether monkey fixed virus is infectious for man except by direct inoculation, which is attended by risk. In the monkey, active virus produces considerable immunity the degree of which is proportional both to the size[6] and infectivity of the dose.[7] It was found that cord tissue harvested at the height of paralysis gave a better immunity than that obtained later, and a better protection than any other part of the cerebrospinal axis. However, active virus proved to be dangerous, for occasionally animals developed mild non-paralytic and even severe paralytic forms of the disease. In some animals immunity developed in the absence of any tissue reaction as indicated by an absence of symptoms, cerebrospinal fluid, pleocytosis, or temperature changes during the course of immunization.

The specificity of the immunity was demonstrated by the fact that animals which received non-infective cord tissue failed to develop immunity.

The dangers attending the use of active virus in the monkey precluded its use in the human. Work on virus-serum combinations was carried out in conjunction with Dr. Alton Goldbloom, McGill University. The virus-serum combinations were given either as an incubated mixture, or separately, in which case the virus was administered intracutaneously and the serum subcutaneously, either before, with, or after the virus.[8a] Both methods of administration gave immunity, and in the latter it was found that serum preceding virus gave a lower immunity than when administered with or after the virus. Further experimentation[8b] showed that an excess of serum, that is, more than was required to prevent infection, reduced the immunity considerably. Inasmuch as the virus in serial passage changes in potency and since batches of convalescent serum are of different strengths, each must be titrated to arrive at a satisfactory balance. This entails the use of a considerable number of monkeys, rendering this form of immunization impractical.

The results with germicidally treated virus are rather contradictory. Phenolized virus has been reported to be dangerous and unreliable in its efficacy by some,[9a, b, c] whereas Kraus[10] and Erber and Pettit[11] reported favorable results. However, from the data presented, the virus used by the latter did

not appear to have been inactivated. Abramson and Gerber,[12] Römer [13] and Jungeblut and Engle [14] failed to demonstrate immunity with formalized virus.

The results of Abramson and Gerber [12] with heat killed virus and the results of Kraus [10] and Erber and Pettit [11] suggest that the possibilities of vaccination with inactivated virus be reinvestigated. This is further borne out by the results obtained with germicidally treated antigens in other virus diseases.

Throughout this work, the infectivity of the virus was checked by repeated intracerebral and intraperitoneal inoculation of large amounts of the germicidally treated virus. To inactivate virus, various concentrations of the germicide were mixed with the virus and kept either at ice box or incubator temperature. In each instance, double

TABLE I

Concentration of Cord Per cent	M.C.P. Dose Injected Intracerebrally	Temperature Ice Box (Centrigrade)	Days of Contact between Virus and Germicide	Result
10	80	2.5	1.5	Paralysis 19 days
10	3,200 + 16,000 1 perit. retested in 10 days	5–6°	2.0	Slight rise in temperature
10	same	5–6°	3.0	No evidence of poliomyelitis
10	3,200 + 16,000 1 perit. retested for 3 consecutive days	0–4°	3.0	No evidence of poliomyelitis
10	3,200 + 16,000 1 perit. retested in 10 days	5–6°	4.0	No evidence of poliomyelitis
10	same	5–6°	4.0	No evidence of poliomyelitis
10	80	4.5°	3.5	No evidence of poliomyelitis
10	600	1–4°	10.0	No evidence of poliomyelitis
10	1,600	2–4°	11.0	No evidence of poliomyelitis
10	1,600	1–4°	10.0	No evidence of poliomyelitis
10	1,600 + 2,800 1 perit. and in 10 days 1,600 + 6,400 1 perit.	1–4°	10.0	No evidence of poliomyelitis
10	same	1–4°	10.0	No evidence of poliomyelitis
10	1,600 + 9,600 1 perit. retested at 2 day intervals for 6 days	2–4°	10.0	No evidence of poliomyelitis

the required amount of germicide was added to a 20 per cent cord suspension and, during the period of contact, the mixture was agitated frequently.

EFFECTS OF GERMICIDES UPON THE VIRUS OF POLIOMYELITIS

It was planned to treat virus suspension with merthiolate, ether, phenol, and formalin, and keep at ice box temperature. However, both merthiolate and ether were discarded because the virus was quite resistant to their action. Phenol in 2 per cent concentration appeared to inactivate the virus after 10 days.

A mixture of 0.3 per cent formalin and 10 per cent active cord suspension was tested after contact of 1.5 to 11 days at ice box temperature and was found to render the virus non-infective after 3 days. To test for virus in these mixtures, large amounts were repeatedly injected intracerebrally and intraperitoneally into *Macacus rhesus* monkeys. Careful observations of the animals, daily temperature readings, and frequent spinal fluid examinations were carried out, and only when all were negative, was the virus designated non-infective. This is demonstrated in Table I.

ACTIVE IMMUNITY EXPERIMENTS IN MONKEYS

A preliminary experiment showed the formalized virus to be superior to the phenolized, the latter being a cord suspension treated with 2 per cent phenol and kept at ice box temperature for 10 days. The animals received either 1 or 2 doses of the formalized virus, the second being given at 10 to 20 days after the first.

Experiments were then conducted with cord suspension treated with 0.3 per cent formalin for 10 days at ice box temperature, to determine the following points:

1. The best immunizing dose, by injecting animals with 2.5, 5, and 10 c.c. amounts, respectively
2. The comparative value of 1 and 2 doses, using 2.5, 5 and 10 c.c. amounts
3. The relative immunity produced with active and formalized virus

The summary of results is as follows:

1. Of 3 animals that received 2.5 c.c. of formalized virus, only 1 had demonstrable tissue immunity. All had neutralizing substances in their blood sera.
2. Of 12 animals given 5 c.c., 2 failed to show demonstrable tissue immunity, while 2 had a slight degree of immunity. Seven had a tissue immunity equal to or better than that developed by animals receiving a similar amount of active virus. All but 1 of the animals showed neutralizing substances in their sera.
3. Two of 11 animals inoculated with 10 c.c. of formalized virus failed to show a demonstrable tissue immunity. Only two showed resistance to direct intracerebral inoculation of virus comparable with that of the majority of animals which received 5 c.c. of the same material. Humoral immunity was present in the sera of all but 2 animals.

Thus 5 c.c. amounts appeared to give the best results. The use of 2 doses of antigen did not appear to be better than 1.

In the previous experiments 0.3 per cent formalized suspension was used after 10 days' contact with the virus, though it is inactivated after 3 days. In the present experiment, virus that had been in contact with the antiseptic for only 3 days was used. Eight animals were given 5 c.c. of a 10 per cent suspension—4 received a single dose, the others 2 doses 11 days apart.

The results obtained with material formalized for 10 days are given in Table II, and those of virus suspension formalized for 3 days in Table III. There is no obvious difference in the results. Thus, if at ice box temperature formalin is permitted to act for a longer time than necessary to inactivate the virus, it does not reduce its immunizing power.

The degree of tissue and humoral immunity obtained in 20 animals receiving 1 or 2 doses each of 5 c.c. of the

TABLE II

0.3% FORMALIN—10 DAYS—ICE BOX TEMPERATURE

No. Monkey	Course of Immunization	Result of Skin Inoculation	Direct Intracerebral Inoculations				Neutralization Tests			
			Test No. 1		Test No. 2		Test No. 1		Test No. 2	
			M.C.P. Dose	Result	M.C.P. Dose	Result	M.C.P. Dose	Result	M.C.P. Dose	Result
460	5 c.c. of 10% suspension	Erythema	2	No paralysis	4	Paralysis 17 days	6	No paralysis		
405	"	Swelling	2	No paralysis	5	Died 9 days, intercurrent infection	1	No paralysis	2	Paralysis 8 days
589	"	No reaction	2	No paralysis	3	Paralysis 9 days	15	No paralysis	20	Paralysis 9 days
584	5 c.c. of 10% suspension repeated in 10 days	Superficial necrosis	1	Paralysis 11 days			15	No paralysis	25	Paralysis 7 days
590	"	"	1	Mild attack *			15	No paralysis		
588	"	Necrosis	3	No paralysis	4	Paralysis 8 days	20	No paralysis	30	No paralysis
490	"	Induration	3	No paralysis			2	No paralysis	3	Paralysis 27 days
558	5 c.c. of 10% suspension repeated in 14 days	Small necrotic area	1	Paralysis 12 days			5	Mild attack		
580	5 c.c. of 10% and 2.5 c.c. in 14 days	Necrosis	1	Paralysis 16 days			20	No paralysis	30	Mild attack
581	5 c.c. of 10% repeated in 14 days	Slight ulceration	2	No paralysis	3	Paralysis 7 days	10	No paralysis	15	Paralysis 15 days
491	"	Induration	2	Paralysis 8 days			6	No paralysis		
24	"	Induration and slight superficial necrosis	2	No paralysis	3	Mild attack	2	No paralysis	4	Paralysis 6 days

* Rise temperature; cerebrospinal fluid pleocytosis
Average intracerebral resistance 1.7 M.C.P. doses
Average neutralizing power of 0.9 c.c. of serum 13 doses

TABLE III

0.3% FORMALIN AT ICE BOX TEMPERATURE FOR 3 DAYS

No. Monkey	Course of Immunization	Result of Skin Inoculation	Direct Intracerebral Inoculations				Neutralization Tests			
			Test No. 1		Test No. 2		Test No. 1		Test No. 2	
			M.C.P. Dose	Result	M.C.P. Dose	Result	M.C.P. Dose	Result	M.C.P. Dose	Result
657	5 c.c. of 10% formalized suspension, repeated in 11 days	None	1	No paralysis	2	Mild attack	5	No paralysis	10	Paralysis 10 days
678	" "	Superficial necrosis	1	No paralysis	2	Paralysis 11 days	3	No paralysis	5	Paralysis 8 days
668	" "	Skin excoriation	1	Mild attack*			5	No paralysis	10	Paralysis 9 days
677	" repeated in 14 days	Slight necrosis	2	No paralysis	3	No paralysis	20	No paralysis	30	Paralysis 6 days
694	5 c.c. of 10% suspension	None	1	No paralysis	2	Paralysis 9 days	20	No paralysis	30	Paralysis 14 days
676	" "	Superficial necrosis	2	No paralysis	3	No paralysis	3	No paralysis	5	Paralysis 10 days
664	" "	Moderate necrosis	1	No paralysis	2	Paralysis 9 days	15	No paralysis	20	No paralysis
666	" "	Superficial necrosis	2	No paralysis	3	Paralysis 9 days	15	No paralysis	20	Mild attack

* 668 cerebrospinal fluid pleocytosis and rise in temperature
Average intracerebral resistance 1.7 M.C.P. doses
Average neutralizing power of 0.9 c.c. of serum 10 M.C.P. doses

TABLE IV

No. Animals	Previous History	Resistance to Direct Intracerebral Inoculation			Neutralizing Power of Serum		
		Less than 2 M.C.P. Doses	2 M.C.P. Doses	3 M.C.P. Doses or more	Less than 5 M.C.P. Doses	5-20 M.C.P. Doses	More than 20 M.C.P. Doses
20	Formalized virus suspension 1 or 2 doses of 5 c.c. each	10	4	6	6	9	5
3	Active virus suspension, 2 doses of 5 c.c. each	1	2	0	–	–	3
5	Convalescent from severe attack	0	2	3	–	–	4*
5	Convalescent from mild attack	5	0	0	4*	0	0

* Serum of only 4 animals tested

formalized vaccine, was compared with: (a) that developed by animals receiving similar amounts of active virus, and (b) that of convalescent monkeys. The latter group consisted of 5 animals which had definite paralysis, 4 with considerable residual paralysis and 6 others that showed clinical manifestations of the disease, with or without paresis. The results are summarized in Table IV.

It is evident from this table that the degree of tissue resistance developed by animals given formalized virus compares favorably in at least half the animals with that developed by animals given like amounts of active virus. Moreover, in half of the animals, the immunity compared favorably with animals recovered from a severe attack of the disease. Almost all the monkeys had a better immunity than those recovered from mild attacks of poliomyelitis.

On the other hand, the degree of humoral immunity was much lower in animals treated with formalized than with active virus and also lower than that of monkeys recovered from severe attacks of the disease, but decidedly better than that of animals recovered from a mild attack of the disease.

These experiments have demonstrated conclusively that an appreciable immunity can be developed by formalized virus, as indicated by the resistance of the animals to direct intracerebral inoculation of virus and the presence of antiviral substances in the blood stream.[13] Because of the amount of skin irritation, and even necrosis, resulting from the formalized antigen, it was decided to use lower concentrations of formalin at incubator temperature. Ten per cent cord suspensions were treated with 0.1 per cent and 0.2 per cent formalin, respectively, at 37.5° C. The former concentration of antiseptic inactivated the virus in 12 hours and the latter in 6 hours.

Eleven animals received either 1 or 2 doses each of 5 c.c. of 10 per cent suspension inactivated with 0.2 per

TABLE V

Name Initials only	Age	Weight (lb.)	First Inoculation of Vaccine		Second Inoculation of Vaccine		Neutralizing Power Serum *Before* Immunization M.C.P. Doses	Neutralizing Power Serum *After* Immunization M.C.P. Doses
			Date	Amount and Route Inoculation	Date	Amount and Route Inoculation		
B	1	21	7/18/34	2 Intracutaneously 3 Subcutaneously			20	40 to 80+
C	2	23	7/18/34	.3 Intracutaneously 2 Subcutaneously			1 to 4	60 to 80+
W	3	40	7/18/34	1/2 Intracutaneously 4 Subcutaneously			15	120+
C.G.	4	35	7/18/34	1.5 Intracutaneously 3.5 Subcutaneously			40-60	120+
E.S.	4	30	7/20/34	2.5 Intracutaneously 4 Subcutaneously			3 to 5	120+
A	2	31	7/20/34	2.5 Intracutaneously 4 Subcutaneously	7/31/34	1.5 Intracutaneously 3.5 Subcutaneously	20	120+
O	2	27	7/18/34	3 Intracutaneously 2 Subcutaneously	7/31/34	2 Intracutaneously 3 Subcutaneously	less 5	120+
H	3.5	33	7/18/34	1/2 Intracutaneously 4/5 Subcutaneously	7/31/34	1 Intracutaneously 4 Subcutaneously	5 to 15	80 to 120+
O'D.	3.5	30	7/18/34	1/2 Intracutaneously 3.5 Subcutaneously	7/31/34	5 Subcutaneously	10 to 15	120+
T.G.	4	37	7/18/34	5 Subcutaneously	7/31/34	2 Intracutaneously 3 Subcutaneously	60	120+
D.	5	40	7/18/34	1.5 Intracutaneously 3.5 Subcutaneously	7/31/34	2 Intracutaneously 3 Subcutaneously	3 to 5	40+
O.S.	6	43	7/18/34	2.5 Intracutaneously 2.2 Subcutaneously	7/31/34	1.5 Intracutaneously 4 Subcutaneously	10 to 15	80 to 120+

cent formalin. Five received that which had been kept at incubator temperature for 6 hours, the minimum time required to inactivate the virus, the other 6, virus suspension formalized for 24 hours. The animals receiving the formalized cord suspension, treated just long enough to inactivate the virus, developed an immunity quite comparable with that developed by those receiving virus suspension, inactivated at ice box temperature. However, the animals that received the over-treated virus (0–2 per cent formalin for 24 hours) developed less immunity.

Another lot of 6 animals received 2 doses each of 5 c.c. of virus suspension treated with 0.1 per cent formalin for 24 and 72 hours respectively. Five of the 6 resisted direct intracerebral inoculation of 1 or more infective doses of virus, and all showed some humoral immunity. There was no appreciable difference in the degree of immunity produced by 24 or 72 hour treated virus suspension. In both, the virus was over-treated and the degree of immunity was slightly lower than usual.

Although the number of animals is small, this work suggests that the virus should be in contact with the antiseptic for just the amount of time necessary to inactivate it in the incubator. Inactivated at ice box temperature, an additional week of contact between virus and germicide, does not diminish its antigenic power. Whether virus emulsion inactivated at ice box temperature could be stored for long periods, or whether when inactivated at incubator temperature, it can then be stored on ice, must be determined.

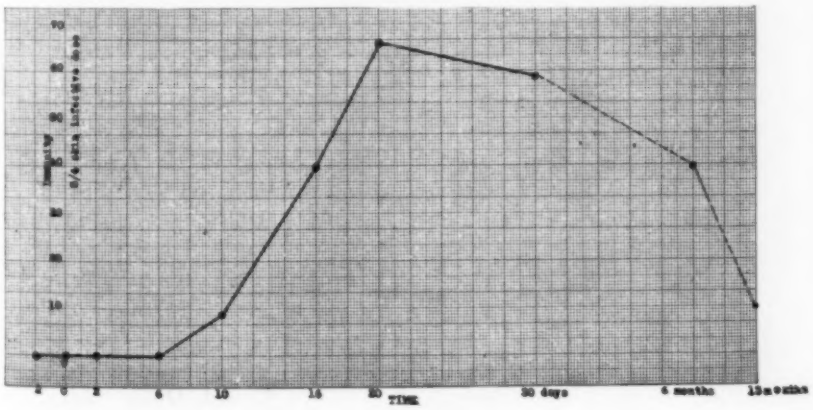
The 0.1 per cent formalized suspension gave but little skin irritation.

In the course of this work certain differences in the immunological response of animals to active and formalized virus were found:

1. The degree of immunity in the case of active virus was proportional to the size of the immunizing dose, the optimum response being obtained with 10 c.c. amounts; while with formalized virus, this relation was not definite, for 5 c.c. seemed as good if not better than 10 c.c. amounts.

2. With active virus, the degree of humoral immunity was decidedly higher than that of tissue immunity, as demonstrated by a comparison between the number of infective doses of virus neutralized by the animal's serum and the number the animal resisted by intracerebral inoculation. Therefore,[8a] humoral immunity is more easily detected than is tissue immunity. With the use of inactivated virus, although the degree of tissue immunity obtained with 5 c.c. amounts often equalled that produced by a like amount of active virus, the neutralizing power of the serum was decidedly lower. Occasionally, in animals immunized with formalized virus, the tissue immunity was greater than that of the serum. In the case of active virus, there was usually

ANTIBODY CURVE 1



a correlation between the humoral and tissue immunity, not evident in the case of the formalized antigen. Normal cord tissue fails to induce the production of neutralizing substances for the virus of poliomyelitis. This tends to rule out the possibility that the higher neutralizing power produced with active virus may be due in part to a nonspecific substance elaborated in response to the injection of normal cord, and which is rendered inert by formalin.

3. Two doses of active virus, when properly spaced, gave decidedly better immunity than a single dose, but, using formalized antigen, 2 doses did not appear to be superior to 1 dose.

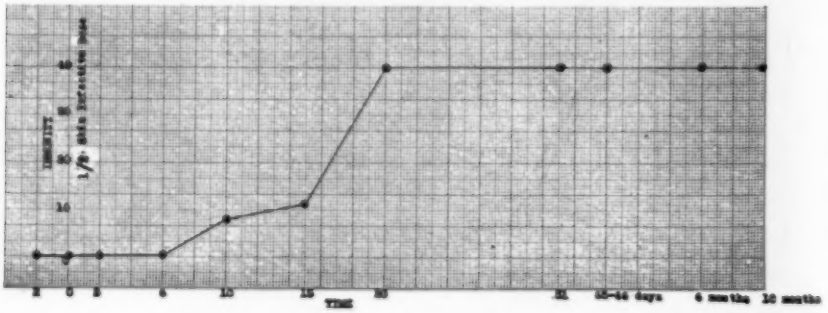
The next step was to determine the first appearance and then the subsequent rate of development of immunity. Inasmuch as the humoral immunity is decidedly higher than tissue immunity in animals receiving active virus, and since they correlate, it was decided to carry this out by following antibody curves in animals receiving active virus. After determining that the blood serum of monkey No. 380 had no neutralizing power for the virus of poliomyelitis, it was given intracutaneously approximately ¾ of a skin infective dose. Serum was collected after 2, 6, 10½, 16, 20, 30 days, 6 and 13 months, respectively, and the neutralizing power tested. The results are shown in Graph 1.

Following a period of at least 6 days, during which no antibody was demonstrable, it became evident between the 6th and 10th days, reaching its height by the 20th day, after which the neutralizing power of the serum diminished so that after 6 months it was approximately ¾ and after 13 months 1/6 of the maximum titre. At the end of 2 years immunity was still demonstrable. To confirm these findings, a second animal, whose serum showed no antibody, received approximately ½ a skin infective dose. The results, given in Graph 2, confirm those of the first animal in showing a lag of about 6 days, with demonstrable antibody between 6 and 10 days, reaching its height about the 20th day. This animal maintained its full immunity for at least 10 months.

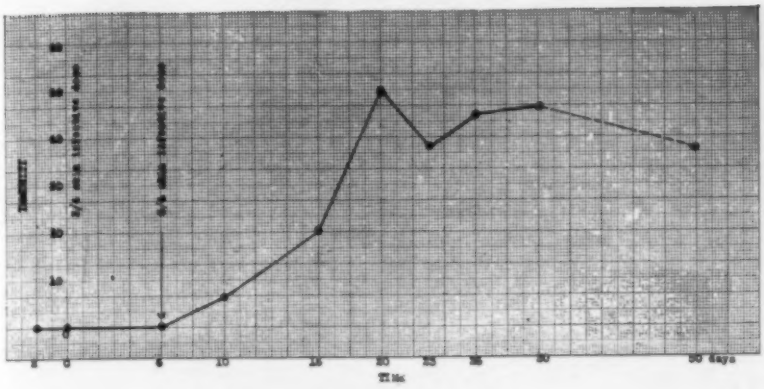
To determine the optimum time for giving the second dose, each of 4 animals, whose serums had no neutralizing power for the virus, received approximately ¾ of a skin infective dose of virus. Each monkey received a second inoculation given 6, 10, 14, or 20 days later. (As in the preceding experiments, the animals were bled at various intervals during the course of immunization and the serums were tested for virus-neutralizing substances.) The results, given in Graphs 3, 4, 5, and 6, show that when a second inoculation is given during the refractory period following the first, it does not produce much additional immunity, but given during the rise or height of antibody response to the first, considerable additional protection follows, especially if given during the rise.

Thus it seems that antibody develops

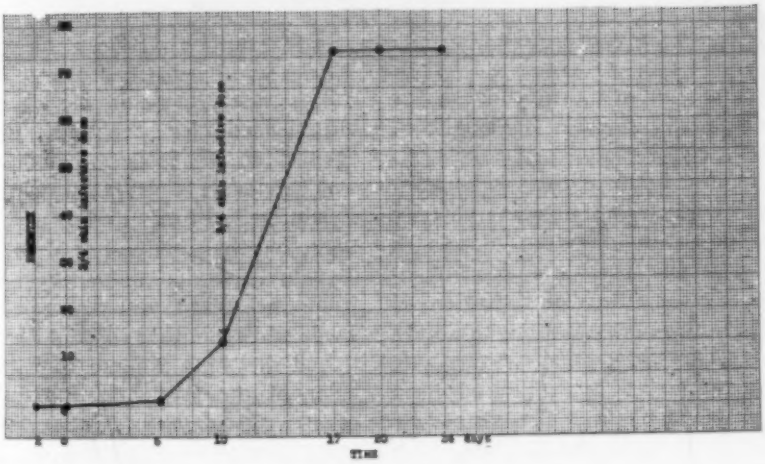
ANTIBODY CURVE 2



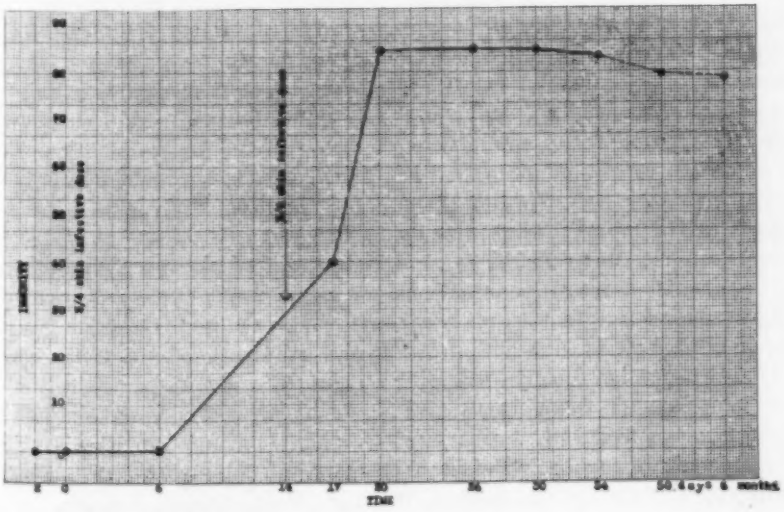
ANTIBODY CURVE 3



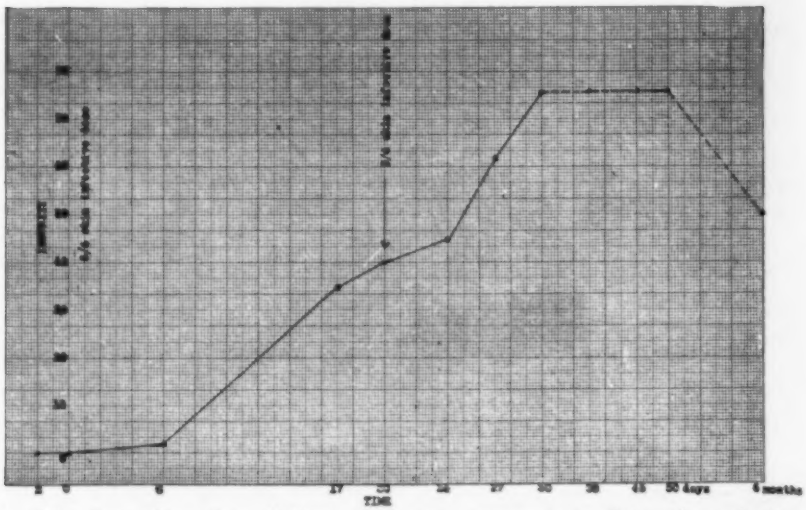
ANTIBODY CURVE 4



ANTIBODY CURVE 5



ANTIBODY CURVE 6



on the 6th day after inoculation, or soon after, and reaches its height in approximately 20 days. The best interval for the 2 inoculations is between 10 and 14 days. At present the only method of determining the success or failure of vaccination is the direct intracerebral test or the demonstration of antiviral substances in the animal's serum. Therefore, the erythrocytic sedimentation rate was followed in a series of 18 monkeys. The tests were carried out between the 7th and 20th days after the administration of antigen, the period during which immunity develops. It was found that of 15 animals which developed resistance to intracerebral inoculation of virus, 13 showed an increased red cell sedimentation rate. None of the 3 animals that failed to develop such immunity showed any change in the sedimentation rate. Inasmuch as the increase in rate might develop at any time between the 7th and 20th days, too many determinations would be required for practical purposes.

The animal experiments had shown that virus suspension inactivated with 0.1 per cent formalin was not only antigenic but also produced no harmful systemic or local reaction. Before attempting to apply it to the human, it was necessary to determine whether the virus fixed for monkeys protected against recently isolated human strains. The literature upon this point is inconclusive. Burnet and Macnamara [16] suggested that the strain isolated from a case in Australia differed antigenically from the animal passage strain they used, while Smith and McKie [17] maintained that only differences in the virulence of the strains existed. On the other hand Weyer,[18] Paul and Trask,[19] and Flexner [20] suggested that there were immunological differences between recently isolated and monkey passage strains. However, Flexner [20] found that although differences existed, the passage virus protected against the recently isolated strains.

Therefore, animals actively immunized and convalescent from attacks with the Fl. monkey passage virus were inoculated with 2 recently isolated strains, 1 of which had undergone 3 and 4 passages through monkeys, and the other 1 passage. The tests were carried out quantitatively in terms of M.C.P. doses of virus suspension.

The sera of 2 animals actively immunized and of 1 monkey convalescent after infection with the passage strain were tested against 1 strain. A definite

quantitative difference was found between this strain and the passage strain, for the serum neutralized approximately only 1/10 as many infective doses of the recent passage virus as of the fixed virus. However, the convalescent animal showed no effects after the intracerebral injection of 5 M.C.P. doses of recent virus. One of 3 animals immunized with the Fl. virus and 3 convalescent animals showed a resistance to direct intracerebral inoculation of multiple infective doses of the second recently isolated strain. These findings are in keeping with those of Flexner [20] and indicate that the monkey passage virus immunizes against recently isolated strains, but that there is a quantitative difference. This appears to be more manifest in the humoral than in the tissue immunity.

It was then decided to test the vaccine on human beings. Before doing so on children, it was deemed advisable to try it upon ourselves, not that we had misgivings about the possibilities of infection, but to determine whether it would produce any disagreeable local or general reactions. Six volunteers from the Bureau of Laboratories were given 5 c.c. doses of 10 per cent virus suspension inactivated with 0.1 per cent formalin for 16 to 48 hours. Three were given 1 dose, 2, 2 doses, and 1, 3 doses. The second inoculation was given 11 days after the first, and the third, 8 days after the second. Those given a single dose were inoculated subcutaneously, while those given more than 1 inoculation received 1 to 2½ c.c. intracutaneously, the remainder subcutaneously. At the time of inoculation there was some soreness lasting but a few minutes and probably due to the formalin. Three of those injected had some induration for a few days, not painful or uncomfortable. No systemic or untoward reaction developed.

The blood sera of all 6 obtained before immunization were tested for antibody and the amount was determined by careful titration. Tests are now in progress to determine whether blood sera obtained between 3 and 4 weeks after immunization showed increased antibody. A preliminary determination on the sera of the 3 receiving more than 1 dose of vaccine suggests an increase. This must be rechecked and the amount of additional antibody must be calculated. The results on the other 3 have still to be obtained and when complete data are on hand, a comparison between the efficacy of 1, 2, and 3 doses will be available.

It was now evident that the vaccine could be administered with perfect safety and so it was given to 12 children, aged 1 to 6 years. Prior to the vaccination, the children were bled in order to determine the amount of antiviral substance in the serum of each.

The virus suspension used for preparation of the vaccine was cultured aerobically and anaerobically before it was treated with 0.1 per cent formalin for 16 hours, 12 hours being the time required to inactivate the virus. Five received a single dose of 5 c.c.; the others were given a second dose, either 11 or 13 days later. One to 2½ c.c. were given intracutaneously, the remainder subcutaneously, in the skin of the abdominal wall.

The children were observed for local and general reactions and temperatures were recorded 4 times daily. There was no apparent general reaction or discomfort and at no time any febrile manifestations that could be attributed to the vaccine. The amount of local reaction was negligible, consisting only of some induration in those receiving the larger amounts intracutaneously. Those receiving a second dose were not rendered sensitive by the first. The bloods were collected at 3 and 4 weeks after the beginning of immunization.

In each instance 0.9 c.c. of blood serum obtained in the control period was

tested against small amounts of virus to determine the level of neutralizing substances before immunization. The sera obtained 3 weeks after vaccination were tested in triplicate, against 40 to 120 infective doses of virus with simultaneous titrations of the virus as controls.

Table IV gives the age and weight of the children, the course of immunization, the antibody content of the sera in the control period and the results of the bleeding after 3 weeks (19 days in the case of K. S. and A.) as far as they have been completed. All 12 children showed the production of appreciable amounts of antibody or antiviral substances. So far, 2 sera have neutralized at least 40, 3 at least 80, and the other 7 at least 100 infective doses of virus.

Immunity was obtained by either 1 or 2 injections. It is too early to state which will give the greater protection. Whether or not the level of neutralizing substance in the control period affects the degree and rapidity of antibody production produced by the vaccine has still to be determined.

The antibody production was decidedly greater in the children than in the monkeys. If the vaccine which produces a relatively high tissue, but low humoral immunity in the monkeys acts similarly for human beings, the degree of protection obtained in these children should be quite appreciable.

Of course we have no index as to the level of immunity required to protect the children against natural infection nor whether the immunity obtained in these is sufficient. The tissue immunity in children cannot be tested, but as the monkeys treated with formalized virus showed a relatively high tissue immunity, sufficient in most cases to withstand intracerebral inoculations of virus, it is quite likely that the children have an appreciable tissue immunity. By analogy with louping-ill,[21] a disease of sheep quite analogous to poliomyelitis, it should be ample to protect against natural exposure to the virus, for formalized louping-ill virus was unable to protect sheep against intracerebral infection, yet did against the natural disease.

SUMMARY AND CONCLUSIONS

Of the various methods tried in *Macacus rhesus* monkeys, for the production of active immunity against the virus of poliomyelitis, virus suspension inactivated with formalin proved most satisfactory. Either 1 or 2 doses gave appreciable immunity and the degree compared favorably with the immunity developed by active virus or after convalescence. Five c.c. appeared to be a satisfactory dose.

A series of adults and children were then given the vaccine without any untoward local or general manifestations. It was shown that the vaccination gave an appreciable antibody response in the humans.

Whether or not the immunity is lifelong has still to be determined. Although longer intervals were not tested in the monkeys, immunity was present after 3 months with formalized virus and 2 years with the active virus.

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Imagination in Public Health

". . . It is inconceivable that such a prolonged and widely spread bodily infection (syphilis) should leave undamaged the vital procreative cells. In what way does this outlook relate itself to practical work? I have personally found it a great stimulus to a better realisation of the reasons for preventive action against the great systemic diseases. The constant thought of death rates and fatal disease is in the end rather depressing. It is like a fresh wind from the hills to conceive that we are, in fact, doing far more—that we are laying the foundations of a work which, in the generations still to come, will largely abolish these chronic indispositions that take so much away from the joy of life. It is true that we are still hampered by lack of knowledge in many avenues, and we wait upon research to show us the lines along which we can usefully apply scientific knowledge. What I do impress, however, is that we as field workers must keep ourselves constantly in touch with all scientific enquiry into such great systemic conditions. Only in that way can we keep our minds living and appreciative of the trend of modern thought. Again, let me lay stress on this fact—that I am not talking eugenic ideals; I am filled with the thoughts of a practical vision; for our prime function is to guide the public in those ways which will deal effectively with the great causes of ill-health, disablement and unhappiness. The field of thought which is opened up by such a generalisation of the effect of individual diseases is almost limitless, and it is obvious that a great correlation of what is ordinarily known as scientific medicine with accurate eugenic experiment would be needed to prove categorically what has been thrown out as a truly imaginative concept for your consideration. But it is such thoughts as these that make our work really interesting and constitute what, to my mind, is an orderly imagination of profound value in keeping us really alive and vigorous in mental outlook and capacity for change. . . ."—Dr. R. Veitch Clark, Imagination in Public Health, *Public Health*, Nov., 1934, p. 62.

Reduction of Maternal and Infant Mortality in Rural Areas*

J. H. MASON KNOX, JR., PH.D., M.D., F.A.P.H.A.
Chief, Bureau of Child Hygiene, Maryland State Department of Health, Baltimore, Md.

APPROXIMATELY 54 per cent of the inhabitants in the registration area of the United States live in the country or in villages and towns of less than 10,000 population. These rural and small-town residents comprise a larger proportion of native born Americans, white and colored, than is found in the cities. The infusion of young life entering the large centers of population each year comes in large part from these less congested areas. It is important, therefore, that measures intended to promote public health, to diminish illness and death, should at least be equally effective in both rural and urban areas.

The difficulties of carrying out public health procedures in the more sparsely settled parts of the country may be an explanation but not an adequate excuse for the greater protection afforded residents of cities.

MATERNAL HYGIENE

It is not the purpose of this paper to discuss in detail the causes of the high maternal mortality rates in this country. This has been done repeatedly by experienced obstetricians and public health officials. The defects of the present *laissez-faire* procedures have been thoroughly exposed and the need of more thorough obstetrical training in the medical schools emphasized. Suffice it to say that each year approximately 16,000 comparatively young women die from puerperal conditions producing a maternal mortality of 7 per 1,000 live births.[1] This rate for the whole country has remained at about the same figure for a number of years. Two-thirds of these deaths are from sepsis and toxemia, conditions which are generally preventable. It is with no feeling of national pride that one records that when a Scandinavian woman comes to this country she doubles her danger of succumbing in becoming a mother.[2]

As is generally known, the figures of the Bureau of the Census indicate that the maternal death rates in rural areas are considerably lower than those in the cities, 6.2 vs. 7.8 per 1,000 live births in 1929.[3] This difference in rate however is apparent rather than real and would disappear if the deaths of women, residents in the country and small towns, who come to city hospitals for delivery, were credited to their place of residence. Thus, according to the survey of maternal deaths made recently by the Children's Bureau in 15 representative states, 28 per cent of the women dying in city hospitals from puerperal causes[4] were non-residents coming largely from rural areas and small towns. Non-resident maternal

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deaths in Baltimore, for example, increased the maternal death rate in the city from 5.9 to 6.8 per 1,000 live births. Last year 23 per cent of the puerperal deaths in Baltimore occurred among residents of the counties of Maryland outside of the city. A study of the maternal deaths in Maryland, exclusive of Baltimore, a few years ago, disclosed conditions which probably are equally true of much of rural America.[5]

As usual, 60 per cent of the mortality was due to sepsis and toxemia. Eighty-two per cent of these women were attended by physicians alone and but 10 per cent by midwives alone. Eighty-nine per cent of the women were married and 66 per cent had older children. Only 8 per cent received anything like adequate prenatal care, and 56 per cent had had no prenatal care whatever. Twenty-seven per cent of the total deaths occurred among women whose pregnancy was interrupted before the 7th month and who had not been under the care of a physician.

A tragic feature of this study was the large number of women who did not consult a physician until serious complications had intervened, usually too late for relief even in the most experienced hands. Surely such conditions which are not exceptional in rural America call for prompt attention and relief. Moreover, it is understood that the neonatal deaths occurring in the 1st month of life, comprising about one-half of the deaths in the 1st year, as well as the stillbirths, can be radically reduced only through more general and adequate prenatal, natal, and postnatal care of the mother.

INFANT MORTALITY

When we turn to a brief consideration of infant mortality in this country we have reason for greater satisfaction. A third of a century ago it is probable that 1 of every 6 infants born alive died in its 1st year. Sir John Simon of England has asserted that a high infant mortality rate almost necessarily denotes a prevalence of those causes and conditions which in the long run determine a degeneration of race and are an indication of the existence of evil conditions in the homes of the people. Sir Arthur Newsholme has called the infant mortality rate the most sensitive index we possess of social welfare. A high infant death rate means the sacrifice not of the unfit, but of the unfortunate infants, those deprived of proper care.

In the volume on Infant Mortality published this year by the Bureau of the Census it is recorded that in 1930 out of 2,204,000 live births in the birth registration area in continental United States, comprising 94.7 of the total population, there were only 142,000 infant deaths under 1 year, giving an infant mortality rate of 64.6.[6]

The improvement can be seen best in a comparison of the rates in the original birth registration area from 1915 to 1930, inclusive. In 1915 there were nearly 76,000 infant deaths with a rate of 99.6 per 1,000 live births, whereas, in 1930 in the same area, in which the population had increased more than 7,000,000, there were but 43,000 infant deaths with a rate of 62.1 per 1,000 live births. While there has been a continuous reduction in the infant mortality rates during the last 20 years, in both urban and rural areas, the lowering of the rates in the cities has been the more marked.

The infant mortality rate in 1915 was 103.1 in the cities and 93 in the rural sections. The city rate gradually approached the rural rate and since 1925 it has been consistently lower, being 61.2 in 1930 versus a rural rate of 64.[7]

The more rapid reduction of infant deaths in the cities is due largely to the decrease in deaths from diarrhea and enteritis, the mortality rate from these diseases in the cities in 1917 being 23.9

and 6.8 in 1930. In the same period the rural infant deaths from the same causes decreased from 16.1 to 8.4 per 1,000 live births.[8] This reduction of diarrheal deaths among infants in the large cities is illustrated in a comparison of Baltimore with the rest of the state consisting for the most part of a rural population. There were, in 1933, but 62 deaths from gastroenteritis in infants under 1 year in Baltimore, while in the counties outside of Baltimore, with an approximately equal population, there were 171 infant deaths from these disorders.

This experience is true of other large cities as compared to surrounding country areas. It indicates that the kind of care which keeps a baby well is not equally available in the rural areas and that disadvantages of crowded living conditions are compensated for by better environmental sanitation.

INFANT HYGIENE

Perhaps the most important factors which favor the well-being of the city infant are:

1. Pasteurized clean milk
2. Available infant welfare stations to which mothers of limited means can bring their infants for examination and advice from skilled physicians
3. Home visits by nurses to instruct mothers in the care of their babies
4. Sanitary disposal of waste and a reduction in the number of house flies

This kind of assistance is not so generally provided for the indigent rural mother, which explains in part why she loses a larger proportion of her babies than does the city mother of the same economic status.

When one seeks for a means for overcoming this disparity between the underprivileged infant in the congested districts in the city and the baby of the poor farmer living in the wide-open spaces, it may be profitable to recall the history of the maternal and child hygiene movement in this country.

LAY INITIATIVE RESPONSIBLE FOR THE MATERNAL AND CHILD HYGIENE MOVEMENT

The movement began in the large cities. It was due in a marked degree to the interest and vision of lay groups of interested, socially minded men and women, who became aroused by the suffering and loss incident to the excessive mortality among mothers and infants and took practical steps to improve conditions. Local volunteer organizations expanded into state and national associations which were tremendously influential in awakening public sentiment.

These pioneer activities were often directed by physicians whose experience and knowledge supplied the necessary medical background. The medical profession as a whole, however, was not particularly concerned. Influenced by an aroused public opinion, city boards of health generally followed the paths opened by the volunteer organizations and later depended upon lay support for help in the enactment of milk ordinances and of other measures which have furthered child hygiene.

ACCEPTANCE OF RESPONSIBILITY BY LOCAL, STATE AND FEDERAL DEPARTMENTS OF HEALTH

State departments of health gradually followed the lead of the city boards of health in this field. A great amount of valuable work resulted. Perhaps this very expansion of official activity has rendered it less evident to the influential citizens of rural communities that they have a personal responsibility to help prevent unnecessary deaths among women and children in their neighborhood. To them this seems to be the job of the local health officer and the public health nurse.

Certainly progress at present made in the field of maternal and infant hygiene in the cities would not have taken place had the sole responsibility been

assumed by the professional workers. But a fraction of our rural districts is served by trained whole-time health officers and nurses. Only those with experience in rural work know how difficult it is for a health officer, with 1 or 2 nurses, to carry on adequate maternal and infant hygiene work, in addition to his many other duties, in a scattered population in a large territory without the help and coöperation of interested residents who know and care.

DEVELOPMENT OF PUBLIC SENTIMENT ESSENTIAL TO SUCCESS

One of the important functions of a health officer, who is determined to lower the maternal and infant mortality rates in a rural area, is to develop active and efficient lay support of his undertakings. His personality and his ability to interest the public in his child health program may determine his success or failure in this field. This matter of organizing groups of influential citizens to further a community program in behalf of mothers and infants should be given more emphasis in our schools of public health in addition to the many technical and scientific subjects the embryo health officer is expected to master.

ORGANIZATION OF INTERESTED LAY GROUPS

Experience has repeatedly shown that even in sparsely settled communities which may seem indifferent to high mortality rates among mothers and infants there are always some persons, men and women, who can be interested and organized into a supporting group to sponsor better prenatal, natal, and infant care. Through such a group or committee, lay assistance may be furnished at a clinic, and transportation for certain cases provided. What is more important, through such groups there can be developed a sense of community responsibility for the health of women who are not able to care adequately for themselves or their children. A volunteer organization of this kind grows in influence by the evident justice of the cause it sponsors. Its activities often result in securing additional assistance from public sources toward making environmental conditions more favorable for children.

MEDICAL PROFESSION AS ADVISORY AIDS

Naturally a community looks to its physicians to advise it in matters of health. Certainly individual doctors have played a leading part in the formation of child health organizations in the cities. This is true also in the planning of child health committees in rural areas. It must be remembered, however, that many physicians are rugged individualists, who devote all their time, often for little or no remuneration, to caring for patients who consult them. The sum total of the service they render is incalculable but it reaches a limited group and often does not have a large part in a community-wide plan intended to reach *all* mothers who are in need.

On another occasion the writer has stressed the importance of giving more emphasis in the curricula of our medical schools to the responsibility—not only to his own patients but to the community in which he has cast his lot—which devolves upon a physician by reason of the very knowledge he possesses.[9] The most meticulous care by a physician of the women and children who consult him may not appreciably lower the morbidity and mortality rates in a whole community. These are largely determined by the lack of care of those who are too poor or too indifferent to call a physician promptly for illness, still less to seek his services in order to keep well.

NEED FOR PREVENTIVE AND CURATIVE SERVICES

The great need in rural America today

is that there be set up in every community some generally accepted plan which will make available both preventive and curative services for those who are not able to provide for themselves. Such a plan will take form when a group of responsible citizens organize for this purpose. It is, of course, desirable that the local health officer, if there is one, sponsor and direct such a movement. The lay public is ready for such action. The education of the laity in maternal and child hygiene is being actively promoted by state and city departments of health and national and state medical societies. Physicians giving professional services in a community-wide plan of maternal and child hygiene should receive fair remuneration.

SPECIFIC PROBLEMS INDICATED

Thus far we have discussed in general terms the present needs of mothers and infants in rural America. It is understood that each section of the country has special problems which must be met by specific measures. The variations in the maternal and infant mortality rates among the several states are sufficient proof of this assertion. In 1929 there were 6 states having a maternal mortality rate of 9, and 2 with a rate of less than 5, per 1,000 live births; in 1930 the infant mortality rates among the states ranged from 49 to 145.

SURVEY OF EXISTING CONDITIONS PRELIMINARY TO ACTION

Any adverse conditions existing in a community should be carefully studied by the proposed local child health committees under the guidance of the health officers and physicians, and appropriate remedies should be applied.

MIDWIVES

I am suggesting a few of the outstanding problems which must be faced in some rural communities in formulating a child health program. Thus, in many rural areas in the South there is the midwives' problem. Steady progress is being made in eliminating the unfit midwives and in instructing those who practise. Even the better midwife, however, has definite limitations. She cannot examine her patient, give her prenatal care, or deliver her if she presents abnormal symptoms. Among the patients employing midwives, the prenatal clinics established by a number of local departments of health have proved of inestimable value. In these clinics the midwife's cases are examined and advised and if unfavorable conditions are found the expectant mothers are referred to physicians or hospitals.

DYSENTERY

In the South too, there are many rural areas in which dysentery is endemic and is the principal cause of a high infant mortality. Carefully controlled studies of this disease have been made recently in West Virginia by Dr. George M. Lyon of Huntington.[10] He finds that from 15 to 80 per cent of all children of 5 years, including those of well-to-do parents, have had dysentery. The milk and water supplies are excellent and do not seem to be involved.

In the territories studied, including several counties in West Virginia, Dr. Lyon shows that the transmission of the disease may usually be attributed to the proximity of the infant to an active case of dysentery and to the unsanitary disposal of sewage, with flies as the most frequent carriers of the infecting agent. Poverty, unhygienic surroundings, and warm moist summer heat are favoring conditions. The importance of carriers in the dissemination of dysentery has been emphasized by McGinnes from studies in Henrico County, Va.[11]

In situations of this sort, it is difficult for health officers to accomplish results unless they are backed by in-

telligently informed public opinion and have the support of lay organizations that are determined to remove the proven dangers to infant life.

EXCESSIVELY HIGH MORBIDITY AND MORTALITY RATES AMONG THE NEGROES

In the South too, our mortality statistics are affected unfavorably by a large negro population in which the morbidity and mortality rates are nearly double those of the whites. It has been repeatedly shown that these high rates are not necessary, that colored mothers and infants can be saved by the same methods that have proved effective among the whites, *i.e.*, that there is no demonstrated physical inferiority in the negro. He lives at present with lower moral and sanitary standards. There is reason to believe that if conditions were reversed the white mortality would be that of the negro today and the death rate of the negro approximately that of the white. The majority of the negroes live in country districts. Their condition has been improved in proportion as the leaders among them have learned to understand the steps by which the whites have mounted to higher levels of personal and public hygiene, and have been able to persuade an increasing number of their own race to follow.

There is one county in Maryland in which the negro infant mortality rate was much lower last year than that of the white. This was due in no small part to the coöperation the enthusiastic, intelligent, colored public health nurse in that county secured in the many households she visited.

MATERNAL AND INFANT CARE IN ISOLATED COMMUNITIES

That the lives of mothers and children in a so-called backward country area can be saved by those who know and are willing to lead, is nowhere better demonstrated than by the work of the nurses of the Frontier Nursing Service in the Appalachian Mountains under the inspiring direction of Mrs. Mary Breckinridge. These mountain women have been helped to have their babies safely in a terrain without roads and amid primitive conditions. Similar organized effort would save women and infants now being lost in many rural areas much less difficult to traverse.

CLINICS IN RURAL DISTRICTS

Our experience in rural Maryland indicates that prenatal or child health consultations supported by a coöperative sentiment are effective means of reducing maternal and infant death rates. A special advantage of these clinics has been the discovery and successful treatment of a number of women with contracted pelves, with syphilis, or with threatened eclampsia. It is a reflection upon the social conscience of any community when complications of this sort are not discovered until it is too late to make the needed assistance available. When these clinics are established, a considerable proportion of the patients go to physicians of their choice for the treatment advised at the consultation and, moreover, certain families of moderate means seeing the advantage of the services at the consultations, seek similar services from their own doctors and are willing to pay for them.

The point stressed in this paper is not the necessity for any particular form of clinic or health center, although in many instances the prenatal and child health consultations have met the most outstanding needs. It is rather that, having ascertained the reasons for the unnecessary deaths of mothers and infants, each community through the leadership of informed groups of citizens should see to it that the assistance required to combat these mortalities is provided.

COMMUNITY PHYSICIANS

In some parts of the country where

families are widely separated, the employment of community physicians, who, in addition to their private practice, are expected to give preventive and curative treatment to those of limited resources, may be the best method of meeting the situation. In other communities a system of health insurance covering the care of the mother and infant may be an effective means of securing medical supervision.

In any case, measures which have proved successful in reducing infant deaths are well known and are not beyond the resources of any community. It does require vision and interest on the part of those who lead in community affairs. A local health officer with qualities of leadership can greatly further his cause if he takes time to develop this kind of support.

There is no adequate reason anywhere in this nation for losing more than 2 women in every 1,000 deliveries, or more than 50 infants under 1 year, in 1,000 live births. A larger loss of mothers and infants is preventable and discreditable. It means that the given community does not sufficiently care. An aroused public sentiment could make it difficult for any woman to approach child bearing without previous medical supervision, provided that this service is made available by the community as her right if she cannot furnish it for herself.

A CHILDREN'S CODE

There has recently come to the writer's attention a children's code promulgated on April 6, 1934, in that progressive sister republic in South America, Uruguay.[12] This code seeks to correlate the various regulations intended to protect the life and welfare of the child from the prenatal period through adolescence. The enforcement of the code is under the direction of a control council and of provincial and local committees. The council shall establish the general principles which shall govern the protection of children. These regulations shall be followed by various coöperating committees. The code includes in its provisions the protection of the expectant mother and the new-born infant.

Prenatal protection comprises eugenics, prenuptial examination, care of the pregnant women, including the lying-in and postnatal periods, and the teaching of prenatal care.

Infant protection comprises child health centers, infants' homes, methods of reducing infant morbidity and mortality, mothers' pensions, and the prevention of abuse of children.

The general regulations determined upon by the central council are to be carried out throughout the country by local committees composed of lay and medical members. One may well ask, if in Uruguay, why not in the United States of North America!

SUMMARY AND CONCLUSION

It is the object of the paper to point out that the maternal and infant mortality rates are unduly and unnecessarily high in many rural communities in this country.

These deaths can be decreased when leading citizens are informed and organize to promote corrective measures such as environmental sanitation or the provision of medical and nursing supervision for the indigent as may be needed in their own neighborhoods. In these activities such a committee should be guided by the best professional advice available.

A local health officer can greatly increase the efficiency of his program of maternity and child hygiene if he is able to arouse the active and organized support of those citizens accustomed to lead a community enterprise.

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New York Academy Passes on Vitamin "D" Milk

AT the request of the New York City Department of Health, the New York Academy of Medicine, through its Committee on Public Health Relations, made a study relative to the desirability of making energized milk generally available in New York.

A sub-committee consisting of:

Herbert B. Wilcox, *Chairman*
Paul Brooks
J. M. Lewis
Edgar Mayer
Earle B. Phelps
E. H. L. Corwin, *Secretary*

prepared the report which was adopted by the Committee on Public Health Relations. This report discusses the reasons for Vitamin D milk, the three methods of producing it (Zucker process, feeding of cows with irradiated commercial yeast or ergosterol and direct irradiation of the milk itself), and the physical, biological, and clinical tests involved and the administrative problem.

The committee is of the following opinions:

1. Since the Zucker cod liver oil concentrate is practically a sterile product when it leaves the manufacturer, the amount added to the milk is small and the procedure involved in adding the concentrate to the milk by the distributor is one not requiring contact with human hands, the hazard of contaminating the milk is so slight as to be negligible, providing the milk is pasteurized after the addition of the concentrate.

2. From the standpoint of medicine and health, there is no valid objection to permitting the addition of Vitamin D to milk by any one of the recognized methods under properly controlled conditions.

3. Vitamin D milk, produced by any one of the three methods, should be allowed to be sold, provided the containers carry a label to the effect that it is Vitamin D milk and indicating the process used.

4. For the present at least it is desirable that the label merely states the source of Vitamin D, the health department to decide what it considers a normal protective dose and in its license provisions demand proof from time to time that the milk produced under the license contains the stated dosage.

5. Since the production of Vitamin D is still experimental, the basis for establishing minimum standards for Vitamin D content are unsettled and laboratory service for the purpose of making assays is limited, the official health agencies in the State and City of New York would be acting wisely if they deferred, for the present, the enactment of detailed and specific requirements beyond those necessary to assure a product of safe sanitary quality.—Committee on Public Health Relations Report on Vitamin D Milk. *Bulletin of The New York Academy of Medicine*, August, 1934.

The Ninth Pan-American Sanitary Conference

KENDALL EMERSON, M.D.

Executive Secretary, American Public Health Association, New York, N. Y.

THE Ninth Pan-American Sanitary Conference was held in Buenos Aires from November 12 to 22, 1934. It had the distinction of being the first Conference at which delegates were present from all of the twenty-one Republics of America. Among the important topics discussed were suggestions for revision of the Pan-American Sanitary Code, which has been signed by all but one of the Republics and which deals with the international reporting of certain epidemic diseases and quarantine regulations for air and water navigation; and adoption or approval of the International Sanitary Convention for Aerial Navigation, proposed at Paris on April 12, 1933, and already adopted by a number of European governments.

After considerable debate it was finally agreed that the Pan-American Sanitary Code should not at this time be subjected to formal amendment, but that certain interpretive clauses should be formulated by the present Conference and recommended to the several governments as the sense in which the articles of the Code to which they refer should be applied in actual practice, specifically in cases where reservations or difficulties in the working Code provisions had been encountered. These interpretations concerned themselves with: conditions under which notification of the existence of epidemic diseases should be mandatory; approval of the use by airships of the entry of sanitary information in the log book in lieu of a bill of health; a certain liberalizing of the deratization regulations in vessels built according to approved international rat-proof specifications, or supplied with adequate certificates of deratization.

The International Sanitary Convention for Aerial Navigation was read by the Delegates and its provisions were considered with much care. The Conference voted its agreement with the fundamental doctrines of the Convention and the delegates will recommend to their respective governments adhesion to its regulations and its formal ratification.

To expedite consideration of the thirty-two articles on the agenda of the Conference, six Committees were appointed as follows: Committee on Resolutions; Committee on the Pan-American Sanitary Code and the International Sanitary Convention on Aerial Navigation; Committee on Tropical Diseases; Committee on Yellow Fever; Committee on Venereal Diseases; and a Committee on Plague. These committees met and after much discussion formulated certain resolutions regarding the topics assigned for their consideration. These resolutions were subsequently laid before the plenary sessions of the Conference and most of them were adopted with or without modification. They are embodied in the

"Acta Final" of the Conference and will serve as a valuable guide in future Pan-American Sanitary relationships.

The work of the Conference embraced a wide field of public health interest. Its deliberations may be divided into two broad categories: international problems involving the spread of epidemic disease from country to country through commerce and intercommunication; internal questions of public health administration such as municipal and rural sanitation, centralized or provincial authority, hospital and dispensary provision, protection of the milk supply, nutrition, maternal and infant welfare, preschool and school hygiene, tuberculosis, venereal disease and popular health education. At first thought discussion at an international gathering of health problems largely local in character might seem out of place. But just as in any community the standard of health is no higher than the average health of the families of which it is composed, so in the Pan-American family of nations health standards can only be truly gauged by those prevailing in each of the countries included. The Sanitary Conference provides an admirable channel for comparison, through formal report and through personal contact, of the various methods employed in the different countries and their indices of efficiency in the hands of the several administrative officers. It must be remembered that with the vast distances involved such comparisons can be of infrequent occurrence when contrasted with the easy communication possible between State Health Departments in North America.

A full report of the proceedings of the Conference will be issued shortly by the Pan-American Sanitary Bureau in Washington. Reference will be made here to but a few of the subjects discussed. In the administration of public health there is a very clear recognition of the evils involved in the effect upon it of abrupt political changes. Certain of the Latin American countries are more fortunate than we in our State Health Departments since they appear to have a secretariat of health which carries on despite changes at the top, political preferment perhaps not penetrating as deeply as with us.

There is recognition of the value of the public health nurse and also of the social worker. As yet, however, very little provision is made for such activities in most of our neighboring countries to the south. It would be difficult to meet the expense of maintaining these services from public funds and at the present time adequate training schools for nurses exist to a very limited extent. A similar difficulty confronts most of the countries in the matter of expert public health personnel, there being limited opportunity offered for the technical training of public health executives.

Plague continues to be a major problem of international sanitation. Its existence as an epizootic among inland rodents of certain countries, including the United States, is a probable source of re-infection of port rats adding to the difficulty of keeping ports clean. Both Ecuador and Peru were congratulated on the success with which they were handling their plague problems. It is gratifying to record that the campaign in these two countries is under the direction of an able representative of the Pan-American Sanitary Bureau delegated for this work by the United States Public Health Service. A very efficient system of rat poisoning through the use of food packets containing arsenic has been installed and careful laboratory examinations as well as the reduction of human cases demonstrate the happy results thereby attained.

An interesting discussion arose as to the possibility of the introduction of plague bacilli to American ports through infected fleas in jute bags brought from

Oriental districts. The international Public Health Office of Paris does not feel that the case is proved, while outbreaks of plague in certain places in Peru following the unloading of jute bags containing living fleas on arrival were offered as supporting evidence. So far no plague infected fleas have been found in these bags, but it has been shown by other observers that unfed infected fleas may retain for several months the power to transmit the disease.

The Conference recommended to all the countries represented unremitting efforts toward the extermination of all plague foci and all plague carriers to the end that this grave menace to the public health might ultimately be completely eliminated as a factor in international commerce and communication.

The session on yellow fever was of special interest, evidence in the form of reports of positive serum reactions (mouse-protection test) indicating that the disease exists today in the interior of several South American countries, in one of which it is rather widely disseminated. The same is true to an even greater extent of the countries of tropical Africa.

The fact was also brought out that deaths from yellow fever occurred in regions where no stegomyia mosquitoes or larvae could be found, leading to the belief that some other carrier might be responsible.

Delegates from all the countries reported that malaria continues to be among the most costly of endemic diseases and one that is most difficult to combat. It was recommended to continue the investigations going on at several places or even to create new centers for study of this serious public health problem. It was further recommended that the results of such studies be forwarded to all the countries in the Pan-American Sanitary Conference either directly or through the Sanitary Bureau and that the various species of anopheles which carry the disease be studied and special methods recommended for the eradication of each. Further studies are also needed in the use of quinine and other drugs as prophylaxes against the development of the plasmodia.

It was recognized that at the present time there is a persistent epidemic of typhus exanthematica in Chile and that country was encouraged to make every effort to bring it under control. At the same time a vote of applause was given the Chilean Health Authorities for their success in preventing the spread of the disease to other countries.

There was considerable discussion of the different strains of typhus fever virus, especially of flea-borne and louse-borne types, with the possibility of these types being reciprocally "revertible." It was agreed that it was not necessary to report flea-borne (endemic) typhus to the Pan-American Sanitary Bureau by telegraph or cable, but that the "epidemic" form of the disease should be so reported.

The increase of undulant fever was noted in reports from several countries and a long resolution was adopted recommending the intensive study, bacteriologically and epidemiologically, of this disease. There are a number of questions still requiring much investigation, such as the relationship of the disease in man and animals, its intercommunicability and the methods whereby this may take place, as for example, through milk and milk products, the value of vaccination and the danger of using living germs for this purpose, the disease considered as a problem in industrial hygiene, and other phases of this complicated and increasing menace to public health.

The discussion of smallpox as an international health problem was gratifyingly brief, indicating that control of this disease is on a relatively satisfactory

level. Brazil presented a report advocating the use of the single vaccination as giving as effective results as the more common practice of revaccination, at intervals or during epidemics, of those already successfully inoculated. The suggestion was referred to the various countries participating for further study, the Conference not expressing an opinion on the report.

Tuberculosis is recognized as one of the major problems in all the countries represented. While the death rates from this disease did not appear to be alarmingly high in certain countries, skepticism was freely expressed by the delegates as to the accuracy of mortality records. In the Argentine itself there are about five deaths annually for each hospital bed available and sanatorium construction is recognized as the first need in better organization of the anti-tuberculosis campaign. Voluntary tuberculosis associations exist but command relatively little public support.

BCG was discussed at length and it was found that its use was prevalent in a number of the South American countries. The delegation from the United States set forth the conservative attitude which had been adopted in North America pending the outcome of more carefully controlled experiments both as to its harmlessness and its effectiveness as a preventive medical measure. The Conference voted that, in spite of the encouraging results which American experience seemed to have indicated, it appeared wise to reserve a final expression of opinion regarding the general use of the procedure and to recommend its employment only in those cases where vaccination with BCG appeared to offer the only, or at least the most probable, method of protection for an individual infant.

Venereal disease is considered one of the major menaces to public health and all of the delegates expressed the opinion that greatly added facilities were urgently needed to combat this danger. Educational means were advocated and the provision of more adequate dispensary service together with increase of the free distribution of neosalvarsan.

A resolution of gratitude to the Rockefeller Foundation was passed for its work in the eradication of ankylostomiasis and all countries were urged to continue unremittingly their attack on this disabling disease.

It was recognized by the Conference that while the sanitation of cities, especially those ports involved in international commerce, had progressed to a striking degree during the past thirty years, rural sanitation had by no means kept pace with this progress in most of the countries participating. A resolution was passed stressing the importance of more attention to this very essential phase of public health work and encouraging all the countries to increase their facilities for its expansion.

Maternal and infant welfare projects were reported from several countries and the children's code originated and practised by Uruguay was recommended for favorable consideration by the delegates. Preschool and school hygiene were admitted to be still in an embryonic state and their importance to the public health was clearly pointed out. It was resolved to further the interchange of experiences in these branches of preventive medicine, with especial reference to the desirability of periodic health examinations, the correction of remediable defects and the keeping of adequate records of the health of school children.

Nutrition, safeguarding food supplies, the international traffic in drugs and alcohol, and especially the necessity for greatly increased popular health education were among the many other topics discussed.

As has been mentioned, the outstanding feature of the Ninth Pan-American Sanitary Conference was the fact that all the Republics of the two continents were represented by officially appointed delegates. In addition, the reports of public health progress made in the several countries were most carefully prepared and will be most valuable in documenting present practice in preventive medicine. Discussion was abundant, radical disagreements rare, and there was a gratifying accord on questions of fundamental significance to the underlying principles of public health. A number of topics were left open for further discussion and referred to the next Pan-American Conference for its consideration. Aside from its scientific value, the meeting was notable for the fine spirit of friendliness which prevailed and as an effective opportunity for the promotion of international amity and understanding.

Negro Housing Projects

COL. H. B. Hackett, Director of the PWA Housing Division, lists the following Negro housing projects as now under consideration in his department:

Atlanta, Georgia: University Housing Project, to rehouse 617 families in 2-story row houses and 3-story apartments. Project will contain 2,457 rooms, be built on fraction of 800,000 sq. ft. of land, cost (estimate) $1,900,000.

Indianapolis, Indiana: Indianapolis Community Housing, 1,044 dwelling units containing 3,190 rooms in 2-story row houses and 3-story apartments. To be built on 940,000 sq. ft. area, to cost (estimate) $3,000,000.

Montgomery, Alabama: Thurman Street Project, to rehouse 161 families in 1- and 2-story row houses, each with separate yard and porch. Land area to be used, 300,000 sq. ft., cost to be (estimate) $315,000.

Similar projects are under consideration in Detroit, Cleveland, and Washington, for which complete information is not yet available. Rentals have yet to be determined for each project.—*Public Housing Progress*, Nov. 15, 1934.

EDITORIAL SECTION

Expressions of opinion and statements of supposed facts are published on authority of the writer under whose name they appear, and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association.

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LOOKING AHEAD IN PUBLIC HEALTH

AT this time of year many health officers have already planned their budgets and activities for the ensuing year based entirely upon consideration of local problems and resources. Little consideration by health workers has, however, been given to any national program to improve or extend the public health facilities generally of local, state, and federal health agencies. The effects of the depression upon health work which have been frequently reviewed through the columns of the *Journal*, have been, in essence, to reduce personnel and budgets for state and local health services about 20 per cent on the average. The federal support of activities which aided state and local areas has been reduced an even greater amount. To counteract this in part, a number of emergency relief projects have been provided in the public health field dealing largely with environmental sanitation. More recently an allocation of $1,000,000 from relief funds to the U. S. Public Health Service for aid to state and local health departments has served to relieve the local situation somewhat. But something more than these sporadic and temporary measures is needed to provide effective, well planned and conscientiously executed full-time health supervision.

For a number of years the Association, through the *Journal* and otherwise, has urged broad gauge consideration of public health by the federal government and the development of plans whereby federal influence and resources could be effectively utilized to stimulate further support and aid of local and state health departments.

The President has recently appointed a Committee on Economic Security. Obviously, public health service along the lines now generally accepted and known to be effective, if extended to reach a large majority of the population, would make a real contribution toward economic security, through minimizing the tremendous annual loss from preventable diseases which now amounts to hundreds of millions of dollars.

The President's interest in public health is well known. That he has a sound conception of the fundamental responsibility of government for the organization and support of health services is evident from the report of the New York State Health Commission which he appointed and sponsored.

We believe that this is a most opportune time for health workers to make known their problems and to state clearly the need for federal leadership in health matters and the degree to which the population suffers both economic loss and physical impairment because of diseases demonstrated to be preventable.

Through these columns we have repeatedly urged members to acquaint their representatives in Congress with the importance of public health, and the necessity of federal action in support of health work. We again suggest that you use every means at your disposal to interest your representatives in Congress in the passage of constructive measures and provision for more adequate support for federal health agencies.

More than this, we suggest you write to Miss Frances Perkins as Chairman of the Cabinet Committee on Economic Security, or to Mr. Henry Morgenthau, Jr., as Secretary of the Treasury, or to President Roosevelt, telling of your local health needs which are as yet unmet or which have been curtailed through budgetary cuts, and pointing out the desirability of federal aid and leadership and the need of increased appropriations for the conduct of health services of the federal government, particularly of those of the U. S. Public Health Service and the Children's Bureau to permit them to function effectively in their appointed fields.

You, as health workers, should voice public opinion in health matters and cannot expect your government to provide service for which there is no expressed demand. It follows therefore that unless you are willing, personally and through locally important people, to use every effort to influence federal activities at this time, you must not be dissatisfied with the crumbs of consideration which the work has received in the last few years.

MORE TRUTH IN VITAL STATISTICS

THE great development of hospital facilities in cities during recent years has brought with it a misleading inflation of birth and death rates in certain urban areas, and fallacious reduction of the corresponding rural rates. On the other hand, sanatoria have tended to transfer deaths from cities to rural areas.

As an extreme example of the serious distortion which may be produced by the factor of nonresidence: in New York State, the 1931 birth rate for the upstate urban area, as ordinarily recorded, was 18.1 per 1,000 population, which is 50 per cent higher than the recorded rate for the rural areas. But when correction is made for nonresidence, the urban and rural rates are found to be identical, *viz.*, 16.1.* Again, the uncorrected death rate was slightly higher for urban than for rural areas; but after residence correction this relation was reversed: 11.6 for urban, as against 13.4 for rural. More exteme distortions may be cited in the death rates of such hospital centers as Rochester, Minn., and Ann Arbor, Mich. The effect of such bias has been to make some tables a little worse than useless.

* Report of Committee on Residence Correction, Vital Statistics Section, A.P.H.A., presented at the Pasadena meeting, September 3, 1934. To be published in the 1934-5 *Year Book*.

There have been sporadic attempts to correct this situation by the publication of residence corrected tables in federal and in certain state reports, but too often the correction has been incomplete, or has applied only to a few tables, such as deaths from all causes, or from a few selected causes.

In the light of the growing importance of this problem it is highly gratifying to be able to report two important recent developments. One is that the Division of Vital Statistics of the U. S. Bureau of the Census has expressed the intention of publishing its birth and death statistics on a residence corrected basis beginning with the 1935 volume.

The second development is that the 1932 *Vital Statistics Report* of the New York State Health Department carries, for the first time, a relatively complete set of tables for all administrative divisions of the state, corrected by intra-state transfer of nonresident births and deaths. Earlier reports had published special tables with residence correction, but this, so far as is known, is the first American report in which one can seek information concerning practically any intra-state vital statistics of importance, with the assurance that the data are not seriously biased by the residence factor. The Department of Health of New York State and the Director of its Vital Statistics Division are to be congratulated upon this notable contribution.

CHARLES PORTER, HONORARY MEMBER, SOCIETY OF MEDICAL OFFICERS OF HEALTH

AT the Annual General Meeting of the Society of Medical Officers of Health of England, Dr. Charles Porter, Honorary Member of our Association, the Editor of *Public Health*, and the author of the letter to our *Journal* from England, retired as President.

A unanimous vote of thanks to the retiring President was passed, and Professor W. W. Jameson said that " of all the Presidents of recent years, not one of them deserved the office of President of the Society more than Dr. Porter, who, in all the years of his connection with it, had thrown himself heart and soul into the work and organization of the Society. During his year of office he had done a great deal to enhance the prestige of the Society; he had attended all the meetings and gatherings," and had spoken in behalf of the Society on many occasions. While regretting the loss of his services as President, it was realized that he would now be at liberty again to devote his energies more fully to his duties as Editor of *Public Health*.

Dr. Porter is succeeded by Dr. R. Veitch Clark, Medical Officer of Health of Manchester. He has given distinguished service and has had the exceptional honor of occupying the Presidential chair of two Branches of the Society, the Home Counties and the North-Western. At his installation, he gave a most thoughtful and stimulating address on " Imagination in Public Health."

CHARLES V. CHAPIN, HONORARY FELLOW, SOCIETY OF MEDICAL OFFICERS OF HEALTH

"ONE very pleasing event of the afternoon was the election, to the Honorary Fellowship of the Society, of Dr. Charles V. Chapin, formerly Superintendent of Health and Registrar of the City of Providence, R. I., a position he

had occupied continuously from 1884 till 1932. Though those who moved and supported the enrollment of Dr. Chapin had words to say in support of the proposal, and references to make to the services rendered by him to public health and preventive medicine not exclusively in his own area but throughout the United States and the world at large, actually there was no need for commendatory words. The name of Chapin is known to every Fellow of the Society and to everyone engaged in the health service of this country. He is and always has been regarded as a leader in sanitary science and preventive medicine, and his pronouncements have always been received with respect, and generally regarded as indications as to the line that might safely be taken at once and that inevitably would be taken eventually. It has always been a matter of real pleasure and for congratulation that Chapin was and had been during his working years an ordinary Fellow of the Society. The opportunity of transferring a colleague from the list of ordinary Fellows to the roll of Honorary Fellows presents itself so rarely that the feeling of gratification naturally experienced was very greatly enhanced in the case of Dr. Chapin. Indeed, the only possible reason for regret was that so long a period had been allowed to elapse before the elevation had taken place. There was this also, that to a certain extent in entering the name of Dr. Chapin a link in the chain binding the United States and ourselves, missing since the death of Dr. Welch, had been replaced."—*Public Health,* Nov., 1934, pages 64–65.

SOUTHERN BRANCH OF THE A.P.H.A.

THE third annual meeting of the Southern Branch was held at San Antonio, Tex., November 13 and 14, conjointly with the Southern Medical Association. The meetings were presided over by Dr. Arthur T. McCormack, Health Officer of Kentucky.

There were some 250 registrations, and a number of visitors from outside of the southern section, many of whom took part in the discussions. At the same time the American Society of Tropical Medicine and the National Malaria Committee met, and some joint sessions were arranged which were full of scientific interest, and especially applicable to those living in the southern part of our country and the countries south of us.

The Southern Branch had a full program which made attendance well worth while even if there had been no conjoint meetings or other papers of much interest in the several societies meeting.

Among the distinguished visitors was Dr. Miguel E. Bustamante, Chief, Bureau of Federal Health in the Mexican States. A letter was received from Dr. Manuel F. Madrazo, Chief of the Department of Public Health, and was read by the President. It contained an invitation to our members to take part in the Post-Convention trip to the City of Mexico. Unfortunately only a limited number could do so.

It may be noted with satisfaction and pleasure that at every meeting of our Association for some years past our sister Republic to the south, which is a constituent member of our Association, has been represented, and we trust that each year will bring an increasing number of the health officers of that country to meet with us. Dr. Bustamante introduced two health officers from Mexico who were with us, Dr. Manuel B. Marguez Escobedo, Guanajuato; and Dr. Telesforo Chopa, Monterrey.

Altogether, the meeting was most enjoyable and most successful.

MEDICAL AND SCIENTIFIC ENGLISH

As long as the medical profession contains men capable of producing such articles as that given by Dr. Hurter as his inaugural address [1] before the 95th Session of the Liverpool Medical Institution, it will be to a large degree safe from some of the charges leveled against it, chiefly by editors, and often with good reason. Even those who consider themselves scholars will doubtless be surprised at the wealth of material given in this short address. In commenting upon it, the *Journal of the American Medical Association* quotes the opinion, ascribed to experts, that there are scarcely 100 competent medical writers in our country today, while others believe that the number is no greater than 10 or 12. Certainly every editor will agree to a greater or less extent with these opinions. Writers do not seem to recognize that careful editors are apt to be prejudiced for or against the contents of an article somewhat by the way in which the writer expresses himself. Perhaps this is in a measure unjust. There are rough diamonds who have not yet learned to use language but, as a rule, we cannot but agree with the statement of Buffon that a man's style is the man himself. Carelessness in expression certainly indicates some lack of an orderly mind and leads one to suspect the value of alleged scientific facts expressed in loose language.

We believe that Dr. Hurter uses the word jargon in its older sense, though he clearly recognizes its descent into slang. In its older senses, it means "the dialect of a special sect or fraternity." "Applied contemptuously to the language of scholars, the terminology of a science or art, etc." (1651). Dr. Hurter recognizes vocabulary jargon and composition or prose jargon. Of the latter he gives an example taken from a lecture by Sir Arthur Quiller Couch, at Cambridge, some 20 years ago, which is classic:

A.D. 1604

To be, or not to be;
that is the question
Whether 'tis nobler
in the mind to suffer
The slings and arrows
of outrageous fortune,
Or to take arms
against a sea of troubles,
And by opposing
end them? To die: to sleep;
No more; and by a sleep
to say we end
The heart-ache, and the
thousand natural shocks
That flesh is heir to,
'tis a Consummation
Devoutly to be wished.

A.D. 1913

To be, or the contrary? Whether the former or the latter be preferable would seem to admit of some difference of opinion; the answer in the present case being of an affirmative or a negative character according as to whether one elects on the one hand to mentally suffer the disfavour of fortune, albeit in an extreme degree, or on the other to boldly envisage adverse conditions in the prospect of eventually bringing them to a conclusion: The condition of sleep is similar to, if not indistinguishable from, that of death; and with the addition of finality the former might be considered identical with the latter; so that in this connection it might be argued with regard to sleep that, could the condition be effected, a termination would be put to the endurance of a multiplicity of inconveniences, not to mention a number of downright evils incidental to our fallen humanity, and thus a consummation achieved of a most gratifying nature.

Dr. Hurter points out the difference in length between Shakespeare's lines and the transcription into jargon, the former having 72 words against 161 for the latter. He holds that circumlocution, as shown in the transcription, is a main feature and one of the vices of Jargon. Shakespeare used concrete words to symbolize abstract ideas by images, whereas Jargon fails completely because "it discards the concrete and relies almost entirely on vague abstract expressions."

Jargon feeds on the pompous display of sonorous polysyllables and vague "wooly" abstract nouns which "are its very life blood."

The lesson for doctors pointed out is that they should write in the active voice and use transitive verbs, for example: "The nurse gave him morphine hypodermically," instead of "He was subjected by the nurse to the administration of a hypodermic injection of morphine." How few editors have escaped torment from the misuse of the words "case" and "instance"! Sir Arthur Quiller Couch said, "The man who writes 'Instances of premature mortality are more frequent in the case of men than in the case of women,' when he means that more men die young than women, sins against the light." In a recent paper the writer found, "These cases contracted their infection at . . ."

Sir James Barrie is quoted as saying "The Man of Science appears to be the only man who has something to say, just now—and the only man who does not know how to say it." It is not clear that doctors were included in this criticism, though there is no doubt that the "taunt is not altogether undeserved by many scientists and doctors even to-day."

An example of the practical value of style comes to mind. One of the most famous physicians of America, noted for his originality and the operations he devised and carried out successfully, wrote what has been called "the first thoroughly comprehensive book on the subject in America." It was well received, but had no extraordinary circulation. About the same time another noted physician wrote on the same subject. The latter was a successful practitioner, not at all original, and we know of no operation that bears his name. He was, however, a master of English and style. His book was translated into French, German, Italian, Spanish, and Chinese, and 60,000 copies were sold.

We have always deplored the cutting of fundamentals from the required studies in colleges and universities. Greek and Latin, for example, may have little direct bearing on surgery or internal medicine, but their study gives an appreciation of culture and assists in the use of language. In the hurry of American life, have we not taken too many short-cuts? English medical writers show a broader culture than American as a rule, and we believe this is due to better fundamental education, and a comparative freedom from the desire to master the practical and money-making arts.

REFERENCE

1. Language, Jargon, and Modern Medicine. *Liverpool Medico-Chirurgical Journal*, 42:1 (part 1), 1934.

PUBLIC HEALTH EDUCATION*

PUBLIC HEALTH INSTRUCTION

IT must bring to the people only what is established on a sound scientific basis. It must present its facts with the most effective technic, as to selection of content and form, so as to make the essential facts clear and to arouse an effective desire to apply them. And, finally, the program must be so planned as to emphasize those things which are vitally important and to do so at the times and under the conditions where application of the principles in question can most easily and effectively be made.

C.-E. A. WINSLOW

"The Crying Need of the State"—A "Health Survey of the State of New Mexico," sponsored by the New Mexico Tuberculosis Assn., and published by the state, is edited by Carl E. Buck.

Among the recommendations for the State Bureau of Public Health it is good to note the following:

> A reasonable appropriation for public health education. At the present time there is no special appropriation for this work and yet public health education is the crying need of the State of New Mexico.

Then there is this:

> Two additional persons, one a stenographer at $1,400 per year and the other an assistant in health education at $1,500 per year. ($2,900.)

Proposed also are 3 supervising nurses at $2,400; 11 county nurses at $1,800; and 28 sanitary inspectors at $1,500.

We wish that the report had given some indication of the duties of "an assistant in health education." Lacking that information we are glad that the health educator rates no lower than the trained sanitary inspector and that as "an additional person" he will have a $2 a week edge over the stenographer who doubtless will be a commercial college graduate.

Extremes in the Movie Industry—From June, 1933, to June, 1934, some 500,000 people in 60 cities of 15 states saw "Damaged Lives" and the film lecture on syphilis, "Science and Modern Medicine," and 90,000 carefully prepared pamphlets were sold to those who saw the films.

But the irresponsibility of local exhibitors made it necessary to withdraw the A.S.H.A. endorsement of the picture. Some of the local advertising was of a sensational or salacious nature. In at least one city the picture was accompanied by a lecture of objectionable character, and unauthorized pamphlets were sold at a high rate.

The other extreme was the censorship which closed to the picture some 37 per cent of the potential audience, including the states of New York, Pennsylvania, and Ohio.

If the picture is shown anywhere under the supposed auspices of the

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

American Social Hygiene Association you will help by quickly notifying the association at 50 West 50th St., New York, N. Y.

"Doctors, Dollars and Disease"—This is the title of a series of radio programs on medical economics which will run through Feb. 25, 1935 (with 3 exceptions), on Mondays at 10:30 P.M., E.S.T., over WABC, Columbia network, 60 stations. For a full list of topics write to National Advisory Council on Radio in Education, 60 E. 42d St., New York.

The Advisory Council says:

This series of broadcasts will consider the subject of medical economics, the cost of medical care, the relation between the medical profession and the public, the ways of reconciling the interests of the two groups.

The recent progress of the science of medicine has been little short of miraculous. Physicians as a rule have shown fine professional spirit and have given freely of their time without pay. Yet more than 50 million persons in the United States either do not receive the care which they need, or are heavily burdened by its costs, while many practitioners and agencies for health are under-employed and poorly paid. The barrier is mainly economic. It stands between the doctors and the dentists and the nurses who are able and eager to serve and the patients who are sorely in need of the service. The problem is to bring doctors and dollars and diseases into such helpful and continuous contact with each other that the *practice* of medicine can keep pace with the *science* of medicine. That is the central theme of this series.

The series was arranged by a Public Health Committee of the Advisory Council, with a chairman who is an economist, and five members who are in public health or have been associated with public health interests.

What Education Has Been Done—Brief extracts from annual reports tell us what has been done and sometimes illustrate the meagerness of our tangible, reportable efforts. We hope to quote from various reports from time to time.

The New Haven (Conn.) Foundation reports:

Educational publicity on the early signs and symptoms of the diseases was carried on in the same manner as in the preceding year. A total of 22,900 pamphlets were distributed in the city and certain sections of the Metropolitan Area. This distribution was supplemented by local newspaper articles and talks to lay and professional organizations. Hospital records for the year 1933 indicated a continued steady decrease in the median period of delay between primary symptoms and hospitalization. It is conceivable that the committee's educational policies may be partly responsible for this. That the median decline from 7.8 to 5.6 months in a period of 4 years has been less rapid than might be expected may be due to the fact that about 47 per cent of all cancer cases hospitalized during this period have been non-residents—many coming from areas outside of the committee's sphere of educational influence.

What Radio Objected To—In November the Columbia Broadcasting System refused to allow syphilis to be mentioned by Dr. Thomas Parran, Jr., who was to have spoken in the "Doctors, Dollars and Disease" series.

The censor objected to these two paragraphs:

Against cancer, no progress has been made. Yet many cancer victims could be completely cured if only the disease were recognized in its early stages. We have made no progress against syphilis, though its end results crowd our jails, our poorhouses, and our insane asylums. Yet there are specific methods of controlling it better known to science than the methods of controlling tuberculosis. We need only to do what we know how to do, in order to wipe out syphilis as a public health problem.

In my philosophy, the greatest need for action is where the greatest saving of life can be made. I consider, then, that our greatest needs in public health are first, the leveling up of present services so that every community may receive the benefits that have long accrued to the leaders; and second, a frontal attack by all communities against maternal mortality and deaths among newborn infants; against dental and faulty nutrition; against tuberculosis, where splendid

gains have been made; against cancer and syphilis, where we have done little or nothing.

The leading newspapers of New York City mentioned the incident, explaining that syphilis was the objectionable word.

Baltimore, Connecticut, and Illinois—In Baltimore, as a rule, broadcasts are sponsored jointly by the City Health Department and the Medical and Chirurgical Faculty of Maryland. The following topics were presented in October and November:

Diphtheria Prevention . . . The Department of Education and the Diphtheria Prevention Campaign . . . Parent-Teacher Associations Believe in Diphtheria Prevention . . . Catholic Schools and the Diphtheria Prevention Campaign . . . What You Should know About Hearing . . . Autumn Chills and Colds . . . Has Your Child Been Protected? . . . The School Lunch . . . Why Fumigation Has Been Abandoned . . . Sensible Safeguards in Communicable Disease Control . . . Carbon Monoxide—The Unseen Foe of Man.

Various staff members of Connecticut Department of Health shared in the broadcasting of the following topics:

Safe Bathing . . . How Did You Sleep Last Night? . . . Is There Protection Against Venereal Diseases? . . . Adolescence—A Period of Development . . . The Physician and the Public Health Nurse . . . The Laboratory's Part in Disease Outbreaks.

For many months now all broadcasts of Illinois Department of Public Health have been prepared by Dr. C. M. Chamberlain, of Division of Communicable Diseases. Recent topics have been as follows:

New Hope for Narcotic Addicts . . . The Newer Treatment for Serious Burns . . . Putting Poison in the Pantry . . . The Evil of Extracurricular Activities for the School Child . . . New Light on Inheritance . . . The Great American Tragedy (unsafe driving) . . . The Worst of All Diseases (heart disease) . . . Abdominal Pain and the Operation . . . United States Political History from a Test-Tube . . . Delicious But Deadly Mushrooms . . . The Problem of Skin Disease . . . The Fourth Horseman (wreckless car driver) . . . Battling the Coryza "Bug" . . . Your Germs and Mine . . . How's Your Rheumatism? . . . Death Fighters.

Should the Public Health Education Section Do Likewise?—Much material from advertising sources is used by schools and by health departments. *How may we decide what is sound and desirable for use, and what is unsound or otherwise undesirable?*

An answer to this question has been sought by the food and nutrition division of American Home Economics Association. A report is presented by the chairman of the committee on illustrative material, entitled "Criteria for Evaluation of Illustrative Material for Foods and Nutrition Teaching," by J. I. Rowntree. The report presents questions and sub-questions to be raised as to

Educational value of the commercial and non-commercial materials and to the appraisal of advertising matter.

Many of the questions about the suitability of the material and its educational value might well be asked about much material issued by health agencies, and the manner of using health education material from any source, such as:

Are posters used mainly to fill space on an uninteresting wall, to give the room a semi-scientific appearance, or are they shown only when they will serve a definite purpose in developing judgment or supplementing information?

Is there one fundamental point which attracts attention, and do all other data support, clarify, and explain that point?

Is the material presented in a vivid manner that readily attracts both the eye and the interest?

Does the form aid in organizing the subject matter presented?

Are well-labeled tables or graphs used to impart essential information?

Does the mass of detail and profusion of material result in a confused or fleeting im-

pression rather than the acquiring of one essential idea?

From the third section, "Appraisal of Advertising Matter, we quote two groups of questions:

Is the information set forth scientifically sound?

Were the claims which are made for the product verified in a sufficient number of laboratories to be conclusive?

Is the product likely to have the same value with human beings on ordinary diets as under the laboratory conditions tested; for example, with rats under experimental conditions on very restricted diets?

Do the claims savor of quackery?

Is the advertiser thoroughly ethical in his relation to the public?

Is he attempting to practice medicine without a license?

Is he prescribing for all kinds of human ills without regard to individual needs, encouraging people in self-medication, and thereby delaying proper treatment?

Is he advocating his products for rheumatism, intestinal disorders, heart abnormalities, and infections that merit other attention?

The committee is continuing its work with Mrs. Jessamine Chapman Williams, Oregon State College, Corvallis, as its present chairman. It will welcome criticisms and suggestions for those who attempt to use the present outline.

The report is supplemented by editorials on "School Use of Advertising Material" and "Advertisements of Medicines," the second quoting the text of 6 general rules announced by Federal Trade Commission as its basis for passing upon the advertising of medicines.

All who feel any concern about the use of commercial material by schools and health agencies will wish to read the report and the editorials. In *Journal of Home Economics*, 101 E. 20th St., Baltimore, Md., Dec., 1934. *30 cents.*

Some health workers may try out the proposed criteria and report to the chairman.

The Public Health Education Section may look forward to setting up criteria for the aid of health agencies as well as schools, with due regard to material coming from orthodox health sources as well as that supplied by advertisers.

Soundness of the statements and the relation of the material to advertising is one problem.

The educational value of the material and its suitability to various audiences calls for consideration in connection with the whole range of material more or less lavishly distributed by health agencies. Could we start with minimum standards as to the physical make-up of printed matter? These standards to say that, lacking them, a piece of printed matter looks so dull or uninviting that it is pure waste to distribute it?

"Two Seats on the Aisle"—Questions put in "Second Balcony":

How many (advertisers, store managers and their kind) make a practice of sitting in second balcony seats when they attend the theatre?

How many sit in the bleachers at the ball game?

How many ride cross country in buses?

How many hang onto the trolley straps when they go about their work in the cities?

Do you? Those are the places where your customers are!

There are to be found those "who buy and buy and buy," says the author.

The sales-minded man or woman may not live with the mass (called "mass" for want of a better name) but he should be part of it. He should mingle with it, listen to it, talk to it.

Read the *'Merk* to enliven your inner life. Hear one of Gertrude Stein's lectures—if you can. But, for your business, remember that the publication that has the biggest circulation in this country is Mr. Hearst's *American Weekly*. And millions of copies of *True Story* are still being sold.

In *Advertising and Selling*, 9 East 38th St., New York, N. Y. Nov. 8, 1934. *20 cents.*

The quotations may remind health educators of *their* audiences—not our

friends and associates, not members of boards and committees, not the people we know, but those we are not likely to know unless we are very much on the job.

Good to Read but Not to Look At—Brevity is not always the soul of good writing. Briefly, the Illinois Society for the Prevention of Blindness might have told in its annual report that 240 trachoma clinics were held, 9,894 attended, and 309 operations were performed. As Miss Audrey Hayden, executive secretary of the society, reports these clinics in three single spaced typewritten pages, the people who attended them emerge as human beings. The amusing, if sometimes disheartening adventures make the clinics more than a routine service. There is an account of the borrowing of rooms for clinics including "the only available room in the courthouse which, at the time it was assigned to us, contained two tons of coal, 1 load of wood and 43 spittoons."

Just as humanly, and also with the spirit of adventure lending excitement to success, Miss Hayden tells of the educational work with midwives and of the sightsaving classes.

This is the "report of the executive secretary"—duplicated for a little extra use among those interested in the society. Even so, we wish that there were some headings to make up, partly for the lively reading by Miss Hayden at the Annual Meeting.

Ask the Illinois Society for Prevention of Blindness, 203 N. Wabash Ave., Chicago, to send you a copy of this report which is dated November 19, 1934.

"Situations Frankly Revealed"—Public relations means just that—relations with the public that lead to confidence and understanding, support and use of the health organization of any type.

"If it is important," says Violet H. Hodgson, "for the public health nursing organization to analyze the needs and discover the desires of the public," then

> It is equally essential that the public understand the objectives, policies, and needs of the organization. This necessitates a broad program of publicity that will keep the public in touch with the program the year round and not merely during the annual drive for funds. Good will must be established and maintained through a high quality of service and a general approval of the policies and program of the organization. Such approval can be expected only when the public has been taken into the confidence of the organization, and situations frankly revealed which make changes in content or administration necessary. Frequently this knowledge is confined to the board and professional staff. The public, as sole stockholder and consumer, is entitled to periodic reports sufficiently frequent to keep them informed of the activities of the organization.

Mrs. Hodgson discusses courtesy and friendliness by staff and volunteers in the home and at clinic or conference as important factors in good public relations. In "Public Relations in Public Health Nursing." *Public Health Nursing*, 50 W. 50th St., New York. Nov., 1934. *35 cents.*

When the Horse Changes Color—One angle of the not altogether simple problem of personal publicity for the professional man is illustrated in the following, taken from a state medical journal:

> A little group of physicians was discussing the abuse of advertising when the question of pictures in the lay press came up, and one man called the attention of the group to a picture in a local paper of a group of State Association officials, and he inquired as to whether that would not be termed advertising. It seemed to be the consensus of opinion that such pictures were news stories and should not be considered as in any wise unethical, and we believe that is a correct interpretation. It becomes a horse of a different color,

however, when one's picture accompanies an article that is a personal boost, for there really is no necessity for using a picture of a physician along with a tale of his personal prowess.

A Health Education Program for 200,000—Savel Zimand, after several years' experience in Bellevue-Yorkville area, New York City, sets down "An Organized Community Health Program" in *Quarterly,* Milbank Memorial Fund, 40 Wall St., New York, N. Y. Oct., 1934. *25 cents.*

The objectives of popular health instruction:

First, it is vital that the community have a general knowledge and understanding of the work of the official health organization. Few people now realize in full the important rôle played by a health department in maintaining the welfare of a city, or the various services, with a direct influence on their own and their family's life, it renders. The public should know how a health department functions; its responsibilities; the services it maintains; when and how they may call upon it for help; what constitutes a violation of health ordinances; and to whom such violations should be reported.

The other objectives might be summarized as follows: Familiarizing the community with facts related to health conservation and disease prevention; securing desirable changes in public opinion, attitudes, and habits on questions of preventive medicine and public health *; creating a desire for new facilities; and educating the community to utilize the medical services of a private physician or, if financially unable to pay for such services, to use those of the community's clinics or hospitals.

While the objective should be a well rounded program, local conditions of the area will help determine which subjects should receive the most emphasis. The formulation of a program for a specific district will depend on research, local surveys, and a study of the vital statistics of the area. In any case it seems important, both because of the numbers affected and the opportunity for preventive work offered, that the program include, in addition to acquainting the public with the work of the health department, such subjects as venereal diseases, tuberculosis, maternal and infant care, diphtheria prevention, child hygiene in general, prevention of colds and pneumonia, dental hygiene, nutrition, the dangers of self-medication and quackery, periodic health examinations, and safety at home and in the street.

Then follows an outline of "Methods," "Machinery," and "Instruments," with sections on "Health Education for the Professional Groups" and "School Health Education."

Probably it would be interesting and it might be profitable for health workers in a city or a district of comparable size to sit down with this outline and check the local activities with this demonstration program.

"Wasn't That a Good Speech?"—Under this title appears a "code for convention speakers." The writer outlines what constitutes a good convention speech.

Naturally, the very first injunction must be *Avoid the obvious.* We all constantly suffer under the so-called eloquence of speakers who labor for the thousandth time educational platitudes that begin to impress us as probably not true, because we have grown so tired of them. . . . And even greater misdemeanor, however, is committed by some would-be clever speakers who take these obvious facts and principles and seek to disguise the obviousness of what they are saying by clothing them in a complicated and bewildering terminology. Disagreeing completely with Shakespeare as to what's in a name, they seem to believe sincerely that a new name for an idea makes it a new idea.

In our own energetic day there are so many really new activities going on and so many points of conflict are involved in these, that it ought to be easy to carry out the second suggestion: *Seek and develop a controversial point.* We are much more likely to interest our hearers if we do so. It is desirable to avoid personalities, to keep the battle on a high plane of principles, but it might be even

* As Mary P. Connolly has stated (Connolly, Mary P.: Organization of Adult Groups for Health Education. *American Journal of Public Health,* 24, No. 6, Part 1 (June, 1934, pp. 571–575): "In addition to personal health advice it is important in this day of too close living that men and women shall learn something about disease communication and how they may safeguard themselves; something of the principles of sanitary science, if only for esthetic reasons; something about child care and behavior which will give their children a better chance."

better sometimes to mention someone by name whose ideas we are attacking and to make the conflict somewhat of a personal one than to omit the element of the controversial.

On the other hand, we are professional men and women, and out of a spirit of fairness it is necessary to *Present both sides.* Show the two pictures, and you will not only be displaying the spirit of fair play, but also be making use of the device of contrast, in itself a useful rhetorical method for securing interest.

We have in the past been so sensitive in the matter of dignity that it is more than difficult for some teachers to observe the fourth injunction: *Be lively.* . . . A little slang now and then will do no harm and there is no question that coloquialisms ought to be pretty freely employed. Talk American—1934 American.

It is very important that the next commandment should be observed: *Reach some definite conclusion,* and avoid detours in reaching it. Many a speech goes wobbling along without purpose for dreary minute after minute and when the orator (save the mark!) is through, no one knows what he has been driving at. The closing passages of the talk should make clear, in vigorous phrasing, what it was all about.

This conclusion will be an especially effective one if the speaker observes the next principle: *Say something practical.* (This may mean concrete advice, or the clearing up of a doubt.)

In these days of confusion of the public mind on the subject of the schools and education, it is well to keep in mind this point: *Prepare your talk so that one particular paragraph of it* (say 150 or 200 words) *can be used for publicity purposes.* Of course, the publicity must be good publicity and educators would do well to educate themselves on this subject, inasmuch as anyone acquainted with the principles and the psychology of sound public interpretation is likely to be all the better educator. This paragraph should not only contain the nub of your remarks but it should be phrased in a way that will entertain as well as instruct—two ideals by no means mutually exclusive.

The next commandment is very brief: *Stop when you're through.*

The next is also brief and also important: *Revise your talk . . . and cut it down one-third.* You will not hurt anyone's feelings by talking more briefly than you are supposed to talk.

Perhaps the last commandment, in accordance with the Biblical saying, ought really to be first: *Learn how to talk.* One need be no orator, but certainly any address by a teacher ought at least to be clear in enunciation, careful in pronunciation, and pleasing as to voice. Many a good address is made intolerable by wretched delivery.

Journal, Natl. Education Assn., 1201 16th St., N.W., Washington, D. C. Nov., 1934. *25 cents.*

Do Safety Campaigns Fail?—A Los Angeles police official points to a recent campaign to reduce traffic accidents during which "the (traffic) death rate rapidly went up until it was 20 per cent above 1933." Then, when the campaign ended, the rate "went back to normal."

Says *Literary Digest:*

Mr. Steckel deserves credit for his candor, and for his effort to get at the facts, no matter how they conflict with cherished beliefs. Nevertheless, he sounds far too pessimistic. Let him call any experienced editorial writer, advertiser, or press-agent into conference, and he quickly will learn where his error probably lies. These men know that the public's opinion and conduct can be influenced, and are being influenced, constantly, but that, in some instances, at least, it takes time. Frequently, there is a noticeable time-lag between the date when one of their campaigns is launched, and the date when it begins to show results. Usually the results appear, sooner or later, but they may appear in the period following the one in which they are expected.

The Volunteer in Publicity—All too little use has been made of volunteers by public health departments, and too little publicity use has been made of them in the year-round work of private associations.

A plan and a program for volunteers in public health nursing groups is presented by Evelyn K. Davis. In essentials, what Miss Davis offers seems widely applicable.

Some of the headings: "A Plan Essential," "Finding the Job," "Recruiting the Volunteers," "Placing the Volunteers," "Training the Volunteers," "Management." The article is one to be studied and kept for reference.

Publicity and health education in its inclusive sense offers many jobs for volunteers. Some are obvious and easy, some obvious ones depend upon the type of supervision available. Few health organizations have tested the full range of possibilities.

See "The Volunteer—Asset or Liability?" and the accompanying article on "Lay Participation in Public Health Work," by K. H. Trawick. *Public Health Nursing*, 50 W. 50th St., New York. Nov., 1934. *35 cents*. A reprint of "The Volunteer" alone, *10 cents*.

Pictorial Diagrams—A goodly range of the Neurath type of "pictorial graphs," in black and white, is available in "Modern Social and Educational Trends." This is the Nov., 1934, issue of *Research Bulletin*, National Education Assn., 1201 16th St., N.W., Washington, D. C., *25 cents*.

On the 46 pages appear 28 graphs or diagrams, the subjects ranging from age distribution of the population and infant mortality, to growth of national wealth and circulation of daily newspapers.

There are chapters on population and on health and vitality, but most of the material will interest our readers, and the selection of diagrams will illustrate possibilities of this graphic form when printed in plain black and white. These examples were prepared by the N.E.A. with the assistance of Pictorial Statistics, 150 East 36th St., New York, N. Y.

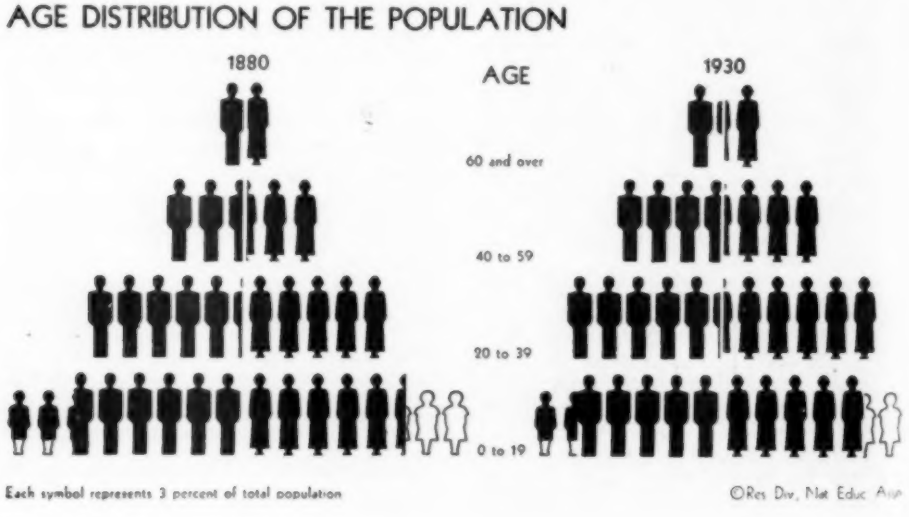
A sample diagram is reproduced on this page.

It Gives Prices and Addresses—The latest teacher's aid to reach us is "A Nutrition Program and Teaching Outline," "developed for use in the health centers and clinics of the Division of Child Hygiene, Dept. of Public Health, Philadelphia."

Of special interest to this department are the numerous lists of reference and teaching materials. As a rule prices (when not "free") and addresses of publishers are given. The chief exception is "Good Books for Reference (Available in Libraries)." Why not encourage and simplify the purchase of a few of those books by including prices and addresses?

One debatable paragraph reads:

Monthly or weekly publications of various city and state departments of health throughout the country are free on request. They



contain frequent articles on health and nutrition work pertinent to locality. New York City and Chicago Departments of Health have various attractive helpful publications.

One cannot but speculate as to the probability that "various city and state departments" will welcome requests from people outside of their respective territories.

The book should be useful in connection with emergency relief nutrition activities. Address Philadelphia Child Health Society, 311 S. Juniper St., Philadelphia, Pa. 156 pages. *$1.00.*

Popular Health Topics in Hygeia —*Hygeia,* published by American Medical Assn., 535 N. Dearborn St., Chicago, Ill., for Dec., 1934, included the following and other material usable in numerous ways (single copy free to a health worker):

Human sterilization . . . Sickness insurance and sickness costs . . . The making and unmaking of a quack (part I) . . . The meals of yesterday . . . The psychology of the middle years . . . The flea . . . Physical examinations . . . The problem of anemia . . . Nobel prize winners in medicine (with portraits) . . . The Wassermann test . . . Speech problems in childhood . . . Committee acceptance of sweets, sugars, and syrups . . . Structural abnormalities of the eye . . . Tuberculosis and the kings of France . . . School and health, including Why measure health teaching . . . How can we judge the results of health teaching?

MAGAZINE ARTICLES

"Accidents Don't Just Happen," by F. Brutto. *Kiwanis Magazine,* 520 N. Michigan Ave., Chicago, Ill. Nov., 1934. *15 cents.* "In Evanston (Ill.) accidents don't *just happen.* Neither did Evanston's record (of prevention) just happen." Material here for local articles all over the country.

"Buying Health" is the theme for the Dec., 1934, issue of *Survey Graphic,* edited by Mary Ross. Here is set up the problem as viewed from various angles—as officially stated by the leading organized groups—as interpreted by representatives of the groups most concerned. *30 cents.* 112 E. 19th St., New York, N. Y.

"Health Insurance." *Nation,* 20 Vesey St., New York, N. Y. Dec. 12, 1934. *15 cents.* "Health insurance is the most immediately practicable and financially possible form of economic-security legislation."

"Pity Poor Elizabeth Barrett! of Wimpole Street, Imprisoned in an Airless Room, Waiting for Death from Tuberculosis." Interesting and effective use of the well known poet to point the health moral. In *Everybody's Health,* 11 W. Summit Ave., St. Paul, Minn. Dec., 1934. *10 cents.*

BOOKS AND REPORTS

Webster's New International Dictionary of the English Language, *(2nd ed.). Unabridged. William Allan Neilson, Editor in Chief; Thomas A. Knott, General Editor; Paul W. Carhart, Managing Editor. Springfield, Mass.: G. & C. Merriam Co.,* 1934. 3210 pp. Price: $20.00 to $35.00 according to paper and binding.

One approaches the reviewing of a monumental achievement such as Webster's New International Dictionary with hesitancy. A review in the ordinary sense of the term is practically impossible.

The second edition of the well known Webster's Dictionary, which has since 1909 been called The New International, is the result of 10 years' work by 207 editors under the general supervision of Dr. William Allan Neilson, as Editor in Chief, and Dr. Thomas A. Knott, formerly Professor of English at the University of Iowa, as General Editor. It has more than 600,000 entries, 550,000 of which are in the vocabulary. There are 13,000 biographical entries and 35,000 entries in the Pronouncing Gazetteer.

The book opens, as did former editions, with the reproduction in color of the flags and arms of all nations, state flags and seals, etc. There are money tables, tables of weights and measures, signs used in writing and printing in the various arts and sciences, proof reading, and a vast amount of other information needed in everyday life, such as forms of address, and abbreviations, of which there are 5,000.

The writer, in editorial work, has occasion to read papers by those engaged in 10 different specialties and these necessarily bring in many terms used in allied sciences. This review is therefore chiefly concerned as to the value of the work to the scientific man. Criticism from the literary and philological standpoints is left to specialists.

As has been pointed out in reviews of medical dictionaries in these columns, one can only select a number of test words. In looking these up one can judge of the clearness of expression, the ease of locating the information desired and the completeness of the references. These tests have been applied to a large number of terms, many of them quite new. The vocabulary of such terms is unusually full and surprisingly up to date. Lexicographers are necessarily somewhat slow in adopting new words and sometimes carry this caution to an extreme. Very few such instances have been discovered in the present work.

Under abbreviations, the many alphabetical names which have had their birth with the New Deal are given. However, as pointed out by some reviewers, " brain trust " and " crackdown " have not made the grade, though " applesauce " and " hot dog " have.

One of the chief differences in the make-up of this edition from the preceding one is the number of words which have been transferred from the " Lower Section " of the pages to the regular vocabulary. These are standard English words, except as indicated by usage labels, as obsolete, slang, etc.

There are 48 full-page plates, 32 of which are in colors, and 12,000 terms are pictorially illustrated. The History of the English Language, to which 58 pages of the introduction are given, can be especially commended. The printing and binding are excellent.

Webster has been for many years the standard of the *American Journal of Public Health*. All questions of spelling, pronunciation, usage, and meaning are settled by this Dictionary. While the present writer cannot speak for future editors, it is safe to say that as long as the publishers show the same enterprise as has been shown for more than 100 years, it will continue to be the standard reference for this *Journal*. Having seen and used the new edition, one wonders how it was possible to get on without it.

The Dictionary is obtainable in a number of bindings to suit the purse of everyone. The publication of this work was celebrated by the assembling of some 300 scholars and educators at a dinner in Springfield, Mass., at which the Editor in Chief and the General Editor presented the book to President Asa George Baker and Robert C. Munroe of the Merriam Company, and they in turn presented it to the world.

MAZŸCK P. RAVENEL

How to Succeed in Life—*By Grenville Kleiser. New York: Funk & Wagnalls*, 1934. 330 pp. Price, $2.00.

An author who has produced no less than 28 other books, mostly on public speaking, offers in this somewhat jejune volume a procedure for the attainment of that elusive condition popularly known as "Success." In 8 chapters of approximately 40 pages each he advises his readers how to plan, sleep, eat, think, work, serve, do, and live well. None of it is very profound. There is no index.

JAMES A. TOBEY

Exercise Without Exercises—*By S. Arthur Devan. New York: Dodd, Mead*, 1934. 84 pp. Price, $1.25.

This brief text seems built about the idea that the secret of good health rests in good posture (centered about the primary school idea of standing and sitting "tall"), proper walking and breathing, and special development of abdominal muscle movements.

Although the author's knowledge of physical education apparently dates in the 19th century—he talks of "physical culture" and "physical culturists"—there are some good hints for the layman.

CHARLES H. KEENE

Physical Defects—The Pathway to Correction—*American Child Health Association, 50 West Fiftieth Street, New York, N. Y.*, 1934. 171 pp. Price, $1.00.

Here is enlightening research into the administrative methods of present school health programs. This book is particularly valuable in that it does not content itself with generalizations but offers definite conclusions and practical suggestions based on concrete facts. It is a specific answer to a specific question: "Why do so many school children continue to suffer from severe, uncorrected physical defects?" Since this question is being asked in so many communities, the answer suggested in this study is of interest to administrators of school health services throughout the country.

The writers of *Physical Defects—The Pathway to Correction* base their findings and conclusions not on theories but on direct inquiries in schools and homes. In the course of the study, research experts examined 25,000 children in 121 schools and talked with 579 teachers, 95 school nurses and with parents in 1,800 homes. The history of each child with a severe defect was checked, as completely as possible, from the time of his first school health examination. In this way the investigators discovered exactly where, when, and why he was dropped from the pathway to correction.

The most important finding is that, in general, school health services are attempting to carry on a much more

extensive program than can possibly be well done with funds and personnel available for it. The conclusions contain specific prescriptions for carrying on a more scientifically selected, and therefore more effective, program.

Every public health administrator, with any interest in school health service, should make specific use of the definite, practical suggestions and conclusions of this book.

CARL E. BUCK

On the State of the Public Health. Annual Report of the Chief Medical Officer of the Ministry of Health for the Year 1933. *London: His Majesty's Stationery Office,* 1934. 295 pp. Price, 4s. 6d net.

The annual report of Sir George Newman is always interesting reading and the "Conclusions" are a liberal education in public health. This one is no exception.

There was a decrease in the births registered, to 580,413 against 613,972 in 1932—the lowest birth rate on record. Infant mortality fell from 65 to 64 per 1,000 births. There were 496,465 deaths against 484,129 in 1932. Suicides decreased by 89, or 1.5 per cent. There were 7,986 more violent deaths, chiefly road accidents, attributed to pedal cycles, than in 1932. Of 205,037 injuries and fatalities, 74,769 were "pedestrians."

The most promising field for improvement in the death rate from 15 to 20 lies principally in the prevention of tuberculosis among both sexes, and death due to accidents among males. While the tuberculosis situation has improved (death rate from pulmonary tuberculosis 993 per million in 1921–1930 to 799 in 1933), the relative slower rate of decline, or even a rise, in young women between 15 and 25 years, continues to give concern. It will be remembered that the appointment of authorized agents as tuberculosis officers was recommended to coördinate under the Medical Officer of Health the various anti-tuberculosis activities. There are now in England and Wales 380–390 such officers, 459 tuberculosis dispensaries, and 26,773 sanatorium beds, against 5,700 in 1911.

Sir George refers to statements made now, as in 1904 and also in 1918, that as a race the English are deteriorating, that there is increase in the deaths attributed to cancer, heart disease, and preventable accidents, that large numbers of children are physically and mentally defective, that the physical condition of the recruits of the Army leaves much to be desired, that the maternal mortality remains practically the same and the nutrition of the people is not as good as it should be. Admitting the truth of some of these statements, on the whole he denies them. The improvement in the mortality rate 1–5 years is greater than that recorded in the first year of life, and from 15 to 20, the rate for 1921–1930 is only 39 per cent of that for 1861–1870. He considers that the evidence, taken as a whole, indicates that general health and nutrition was well maintained in spite of the economic and social difficulties, and that the health of the unemployed and their dependents is not suffering seriously or generally, though he recognizes the physical, mental, and social impairment associated with long unemployment. He does not claim that nutrition is as good as it might be for all, or that it is not capable of improvement. Education has done a great deal. The purchasing power of wages increased in 1933, and foods became cheaper, more available, and more varied, including an enormously increased consumption of fruits, apples, oranges, bananas, vegetables, eggs, fish, and dairy products.

Altogether the report is optimistic. We wish it were possible to give more space to it, and recommend its study.

MAZŸCK P. RAVENEL

The Housing Program of the City of Vienna—*By Charles O. Hardy and Robert R. Kuczynski. Washington: The Brookings Institution,* 1934. 143 pp. Price, $2.00.

This is a timely presentation of a study of one of the most remarkable social experiments of modern times. Vienna's housing conditions have always been below the standard of large cities in Europe and America and for 20 years before the war there was almost continuous agitation for its reform. Taking an active part in this agitation was the public health group which rested its case chiefly on the efficacy of air and light as foes of tuberculosis. Not until after the war, however, did public housing construction become a necessity and an important part of the program of the Social Democratic party which then came into power in Vienna. The ideal professed by this party is the general principle that housing is a public service to be rendered without charge as are school houses, hospitals, and jails. In their actual program, however, capital costs but not operating expenses were taken into consideration. These costs averaged as low as $16 per year in rent for apartments consisting of living room, sleeping room, and kitchen. Central bathing facilities were provided in the larger apartment units which the authors estimate were run at much less than full capacity averaging 11 baths per person per year.

The natural questions as to whether party members were favored in allocation of dwellings the authors have answered to their satisfaction. People are human everywhere.

Public health workers in this country have been on the whole peculiarly apathetic to problems of housing. True, the New York State Department of Health assisted in drafting a model building code for adoption by cities and villages in the state. But experience in Great Britain would indicate that American health officials must concern themselves with the problem of housing if they are to control disease most effectively. Incidentally, Great Britain is now demonstrating that the housing problem can be solved with private capital.

Health officers, engineers, and social workers will find this book most useful in clarifying thoughts on a question which must concern them in an increasing measure. It points out many of the incidental problems that we must solve before advancing in the field of planned housing.

The subject is presented, logically, clearly and interestingly. The book would be helped by a more detailed index. HOMER N. CALVER

O Problema de Limpeza Publica—*By Lincoln Continentino, C.E. Bello Horizonte: Imprensa Official de Minas Geraes,* 1932. 344 pp.

The author, a former professor of the Engineering School of the University of Minas Geraes and at present Chief State Sanitary Inspector, in writing his book, had chiefly in mind the collection of data which might help municipal authorities and experts in his country in solving a problem, refuse disposal, facing all towns both in its sanitary and esthetic phases. For that purpose, he has drawn on his own observations when taking a post-graduate course in the United States and on the available literature. In accordance with accepted style, the subject is studied by him under the four headings of home preparation, collection, separation and classification, and disposal. Street cleaning is considered in a separate section. Methods in use in some American and European cities are discussed. The latter are considered preferable since they depend on cremation and do not stress, as in the United States, the use of products of the conversion, with its

hygienic disadvantages. Since the subject is, as a whole, conservatively handled, the book should prove useful for informative purposes to the audience for which it is intended. A number of photographs (not especially well produced) and diagrams add to the value of the work.

Regrets are expressed that Americans, with their recognized leadership in sanitary engineering, seem apparently to lag behind Europe in the field of refuse disposal, and even admit that Germany and England are more advanced in this respect.

To the few American readers familiar with Portuguese the most interesting part will be that dealing with conditions in Brazilian towns as Rio, São Paulo, Recife and Bello Horizonte. A questionnaire sent to other cities remained unanswered.

A deserved tribute is paid to Saturnino de Britto and his pioneer work in providing Brazilian cities with water supplies and sewage disposal systems.

Altogether this is a meritorious book which within its scope must contribute to the development of sanitary engineering in Brazil. A. A. MOLL

BOOKS RECEIVED

AMERICAN MEDICINE. By Henry E. Sigerist. New York: Norton, 1934. 316 pp. Price, $4.00.

ESSENTIALS OF INFANT FEEDING AND PEDIATRIC PRACTICE. By Henry P. Wright. New York: Oxford, 1934. 222 pp. Price, $4.25.

CLINICAL LABORATORY METHODS. By Pauline S. Dimmitt. Philadelphia: Davis, 1934. 156 pp. Price, $2.00.

SWIMMING, BATH WATER PURIFICATION FROM THE PUBLIC HEALTH STANDPOINT. By F. Wilkinson and F. J. Forty. London: Contractors' Record, 1934. 264 pp. Price, $3.75.

A NUTRITION PROGRAM AND TEACHING OUTLINE. By the Philadelphia Child Health Society. Philadelphia: Philadelphia Child Health Society, 1934. 156 pp. Price, $1.00.

BIRTH CONTROL, ITS USE AND MISUSE. By Dorothy Dunbar Bromley. New York: Harper, 1934. 304 pp. Price, $2.50.

A COLLEGE TEXTBOOK OF HYGIENE. Revised Edition. By Dean Franklin Smiley and Adrian Gordon Gold. New York: Macmillan, 1934. 383 pp. Price, $2.00.

THE ADVANCE OF SCIENCE. Edited by Watson Davis. Garden City: Doubleday Doran, 1934. 400 pp. Price, $3.50.

THE LIFE OF SIR ROBERT JONES. By Frederick Watson. Baltimore: Wood, 1934. 327 pp. Price, $3.75.

TRAINING IN PSYCHIATRIC SOCIAL WORK AT THE INSTITUTE FOR CHILD GUIDANCE, 1927-1933. By Sarah H. Swift. New York: Commonwealth, 1934. 177 pp. Price, $1.75.

TREATMENT BY DIET. By Clifford J. Barboka. Philadelphia: Lippincott, 1934. 613 pp. Price, $5.00.

ADMINISTRATION OF HEALTH AND PHYSICAL EDUCATION. By Jesse Feiring Williams and Clifford Lee Brownell. Philadelphia: Saunders, 1934. 598 pp. Price, $3.00.

PERIODIC FERTILITY AND STERILITY IN WOMAN. A Natural Method of Birth Control. By Prof. Hermann Knaus. Trans. by D. H. Kitchin. Vienna: Wilhelm Maudrich, 1934. 162 pp. Price, $6.50.

THE ADOLESCENT IN THE FAMILY. A Study of Personality Development in the Home Environment. White House Conference on Child Health Protection. New York: Appleton-Century, 1934. 473 pp. Price, $3.00.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Laboratory Experiments With Influenza—Mice are susceptible to the virus of human (and swine) influenza. The virus, when isolated from mice, is neutralized by anti-serum from other animals.

ANDREWES, C. H., *et al.* The Susceptibility of Mice to the Virus of Human and Swine Influenza. Lancet 2, 16:859 (Oct. 20), 1934.

Men, Mice and Microbes—The biology of the host-parasite relationship is discussed in illuminating detail, most of which is entirely foreign to the thinking of work-a-day sanitarians.

BREWER, D. The Development of the Theory of Epidemics During the Present Century. Pub. Health 48, 2:69 (Nov.), 1934.

Why Slums Must Go—An attempt is made to trace specific directions in which poor housing affects health. Among the many reasons are impure water supply, insanitary sewage disposal, lack of private toilets and sewer connections, overcrowding, lack of light and air, dilapidation.

BRITTEN, R. H. The Relation Between Housing and Health. Pub. Health Rep. 49, 44:1301 (Nov. 2), 1934.

Amebic Dysentery Controlled—Briefly reviewed is the whole story of the late Chicago amebic dysentery epidemic, illustrating well the danger of accepting conclusions unchallenged, and showing the difficulties involved in completely reorganizing epidemiologic procedure. A stimulating paper.

BUNDESEN, H. N. The Chicago Epidemic of Amebic Dysentery in 1933. Pub. Health Rep. 49, 43:1266 (Oct. 26), 1934.

What To Do With Garbage—The failings of present methods of garbage collection and disposal serve as an introduction to the second paper which discusses the feasibility of home disposal of food wastes ground and flushed into sewers. It would be fine for apartment dwellers if the sewage works could stand the extra load.

COHN, M. M. The Dual Disposal of Sewage. Municipal Sanitation. 5, 10:332 (Oct.), 1934 (and) 5, 11:368 (Nov.), 1934.

All Colds Are Not Alike—Epidemiological differences exist between head colds, sore throats and chest colds when the presence of fever is considered in relation to the type of infection.

COLLINS, S. D., and GOVER, M. Age and Seasonal Incidence of Minor Respiratory Attacks Classified According to Clinical Symptoms. Am. J. Hyg. 20, 3:533 (Nov.), 1934.

Sex Differences in Pneumonia Mortality — During childhood more boys than girls die of pneumonia, due presumably to inherited susceptibility. The difference disappears temporarily at puberty. In adolescent years excess rates for males are presumably due to a variety of factors. From 20 to 69 the male death rate excess may be attributable to occupational hazards, for the male excess disappears in certain rural regions. In old age the female rate usually is greater than the male, probably because only the tough men are left.

DOULL, J. A., *et al.* The Sex Ratio of Pneumonia Mortality and Its Possible Relation to Occupation. Am. J. Hyg. 20, 3:628 (Nov.), 1934.

Why Bowels Balk—Dosing from infancy onward and bad habits, more than insufficient bulk in diet, are the causes of constipation. The Friday night purge is as much an institution as the Saturday night bath in most British families favored with youngsters.

GREGORY, H. H. C. The Prevention of Constipation in Children. J. State Med. 42, 11:632 (Nov.), 1934.

More Arguments For Pasteurization—Five outbreaks of food poisoning from which staphylococci were isolated are added to the record. No uniform biological or serological characteristics are evident. Raw milk and cream and human contact are the most likely vectors.

JORDAN, E. O., and BURROWS, W. Further Observations on Staphylococcus Food Poisoning. Am. J. Hyg. 20, 3:604 (Nov.), 1934.

Does Childhood Tuberculosis Protect?—The initial tuberculosis infection carries a double liability: the bacilli remain alive indefinitely and liable to be set free; the allergy resulting from the first invasion converts the comparatively harmless protein of succeeding tubercle bacilli into a virulent poison.

MYERS, J. A., and HARRINGTON, F. E. The Effect of Initial Tuberculous Infection on Subsequent Tuberculous Lesions. J.A.M.A. 103, 20:1530 (Nov. 17), 1934.

Errors in Phenol Coefficients—Any small deviation from prescribed conditions for determination of survival times in phenol coefficient tests may produce differences in the resistance of the culture. Errors may be large for slight deviations in technic. A 1° difference in temperature of incubation of the culture will cause a significant difference in its resistance to phenol. A two-hour difference in the age of the culture is significant when tests are made at 15 second intervals, and a four-hour difference in age will affect results from 5 minute interval tests.

SMYTH, H. F., Jr. Evaluation of Some Factors Influencing the Phenol Resistance of Staphylococcus Aureus. J. Bact. 28, 4:333 (Oct.), 1934.

Agglutinin Response to Vaccine—O agglutinin formation takes place as readily with suitable anti-enteric vaccines as it does during enteric disease. However, a better response is obtained with freshly prepared antigens than with those that have been exposed to the usual concentrations of phenol even for a short time.

STUART, G., and KRIKORIAN, K. S. Agglutinin Response to Recent Anti-Enteric Vaccination. Lancet 227, 5795:644 (Sept. 22), 1934.

Varieties of Typhus Fever—Brills disease is an imported form of European louse-borne typhus fever and is distinct from the Mexican rat-flea-borne type of the disease.

ZINSSER, H. Varieties of Typhus Virus and the Epidemiology of the American Form of European Typhus Fever (Brills Disease). Am. J. Hyg. 20, 3:513 (Nov.), 1934.

Pro BCG—Calmette's vaccine prevents tuberculous infection in the exposed infants under observation, reports this Swedish researcher.

WALLGREN, A. Value of Calmette Vaccination in Prevention of Tuberculosis in Childhood. J.A.M.A. 103, 18:1341 (Nov. 3), 1934.

Birth Reporting Deficiencies—Estimates of the completeness of birth reporting in each state are of great value to anyone using statistics seriously. Some states have practically perfect reporting, but others have obviously slumped since admission to the Registration Area. Nineteen were estimated to rate below 90 per cent completeness in 1930. One state showed only 72 per cent completeness for whites and 30 per cent for colored. Infant mortality rates are lowered appreciably through use of the author's corrected birth figures.

WHELPTON, P. K. The Completeness of Birth Reporting in the United States. J. Am. Stat. Assn. 24, 186:125 (June), 1934.

ASSOCIATION NEWS

SIXTY-FOURTH ANNUAL MEETING
MILWAUKEE, OCTOBER 7–10, 1935
Headquarters: Hotel Schroeder

COMMITTEE ON PROFESSIONAL EDUCATION MEETING

A MEETING of the Committee on Professional Education was held in New York on December 8. It will be remembered that this committee is charged with the carrying out of research and the development of standards for professional education and training in public health work, and the performance of necessary activities with a view to maintaining professional qualifications of high standard.

Accordingly, the committee, through its various sub-committees, has been giving consideration to the problem of minimum qualifications and training of health officers, sanitary engineers, sanitary inspectors, and public health nurses. It is hoped in time to extend these studies to other professional groups. Studies in coöperation with other agencies have been carried on to determine minimum requirements which it is felt persons entering the public health field should possess.

The committee has concerned itself with the question of teaching preventive medicine in medical schools, and is hopeful that a plan may be worked out to interest institutions in the desirability of giving increased consideration to this problem.

It is planned to hold another meeting of the committee early in the summer and to consider recommendations for presentation at the Milwaukee Annual Meeting.

COMMITTEE ON RESEARCH AND STANDARDS MEETING

THE Executive Committee of the Committee on Research and Standards met in New York on December 6 and devoted considerable time to the question of the status of various standards of the Association.

It is planned to publish in an early issue of the *Journal* a list of Association publications and standards, indicating their present status, and in many instances the expected date of revision. Such a statement should prove of value to the membership, since the standards in question cover many phases of public health work.

The Sub-Committee on Communicable Disease Control is actively engaged in a revision of the pamplet on Communicable Diseases, and hopes to have it available within a few months.

The referee on Shellfish Examination reported that a revision of Standard Methods for the Examination of Shellfish will be undertaken during the year.

The committee has also interested itself in many other pertinent problems, and will follow an ambitious program during the coming year.

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Samuel G. Arnold, M.D., 209 City Hall, Long Beach, Calif., Health Officer

Nolton N. Ashley, M.D., City Hall, Oakland, Calif., City Health Officer

Albert M. Price, C.P.H., 1580 Jackson St., Charleston, W. Va., Director of Rural Sanitation, State Department of Health

Claude A. Thomas, M.D., 212 W. Burke St., Martinsburg, W. Va., Berkeley County Health Officer

Edward P. White, M.D., Gaffney, S. C., Director, Cherokee County Health Department

Vital Statistics Section

Edward B. Bosworth, C.P.H., 121 Whitney Ave., New Haven, Conn., Statistician, Department of Health

Public Health Engineering Section

Roy B. Everson, 627 W. Lake St., Chicago, Ill., Everson Filter Company

Fujio Kashihara, 701 W. Illinois St., Urbana, Ill., Assistant Sanitary Engineer, South Manchuria Railway Company

Industrial Hygiene Section

Violet H. Hodgson, Department of Health, White Plains, N. Y., Director, Division of Public Health Nursing

Francis R. Holden, Ph.D., Belle Field Apts., Detroit, Mich., Chemist, Industrial Health Conservancy Laboratories.

Food and Nutrition Section

Francis P. Griffiths, M.S., Department of Bacteriology, Mass. State College, Amherst, Mass., Junior Bacteriologist, U. S. Bureau of Fisheries

William E. Krauss, Ph.D., Ohio Agr. Experiment Station, Wooster, O., Research Worker in Nutrition

Minna Stitch, Hunter College, Bronx Bldgs., Bedford Park Blvd. & Navy Ave., New York

Mark H. Wodlinger, 400 W. Madison Street, Chicago, Ill., President, American Research Products, Inc.

Child Hygiene Section

Marguerite M. Hussey, Ph.D., Box 45, Park Ridge, N. J., Teaching in School of Education, New York University

Public Health Education Section

Violet R. Ward, B.A., 54 Stratford Rd., Berkeley, Calif., Supervisor of Health Education, Berkeley School System

Public Health Nursing Section

Lydia R. Sheall, R.N., 1806 Maple Ave., Evanston, Ill., Superintendent, Visiting Nurse Assn.

Juanita R. Zamora, Thermal, Calif., School Nurse

Epidemiology Section

Henry T. Dean, D.D.S., U. S. Public Health Service, Washington, D. C., Dental Surgeon

Salvador Riera-Lopez, M.D., C.P.H., Department of Health, San Juan, P. R., Epidemiologist

DECEASED MEMBERS

H. L. Akridge, M.D., Brunswick, Ga., Elected Member 1923, Fellow 1929

W. G. Hollingworth, D.V.S., Utica, N.Y., Elected Member 1919, Fellow 1926

Vernon Robins, M.D., Louisville, Ky., Elected Member 1916, Fellow 1922

F. W. Sears, M.D., Syracuse, N. Y., Elected Member 1914, Fellow 1922

Dr. John H. Blanks, Zion, Ill., Elected Member 1925

E. Pauline Bledsoe, McPherson, Kans., Elected Member 1933

Nelson C. Davis, M.D., Bahia, Brazil, S.A., Elected Member 1923

George W. Hunter, Ph.D., Claremont, Calif., Elected Member 1928

Fred J. MacDonald, M.D., Schenectady, N. Y., Elected Member 1931

Paul F. Nichols, M.S., Berkeley, Calif., Elected Member 1934.

Dr. James M. Parrott, Raleigh, N. C., Elected Member 1932

Charles V. Roman, M.D., Nashville, Tenn., Elected Member 1926

NEWS FROM THE FIELD

Ohio Federation of Public Health Officials

THE Ohio Federation of Public Health Officials held its annual meeting at the Deshler Hotel, Columbus, Ohio, November 14–16, in cooperation with the Ohio Health Commissioners Conference conducted by the State Department of Health.

The following officers were elected:

President, Dr. W. G. Rhoten, Wooster
Vice-President, Dr. A. G. Sturgiss, Marietta
Secretary-Treasurer, Dr. W. D. Bishop, Greenville
Representative on the Governing Council, A.P.H.A., Dr. G. D. Lummis, Middletown.

The principal speaker for the Federation was Dr. Joseph Mountin of the U. S. Public Health Service, who has been in Ohio for some time making a study of Health Administration in county government. His subject was "Public Health Administration under County Government Amendment."

The attendance at this meeting was approximately 350, representing health commissioners, nurses, and sanitary officers.

Michigan's Public Health Conference

THE Fourteenth Annual Public Health Conference of the Michigan Public Health Association and the Michigan Department of Health, held in Lansing on November 7–9, attracted a record attendance of 440 health officers, public health nurses, sanitary officers, and laboratory workers. All but 15 of the state's 83 counties were represented, Wayne County sending 70 members.

Officers of the Michigan Public Health Association elected at the Annual Business Meeting are as follows:

President—Dr. B. W. Carey, Detroit
Vice-President—Dr. G. M. Byington, Battle Creek
Secretary-Treasurer — Marjorie Delavan, Lansing
Directors for 2 year terms—Dr. V. K. Volk, Pontiac; Dr. William R. Davis, Lansing; and Mrs. Hugh Gaston, R.N., Sault Ste. Marie
Representative on Governing Council of A.P.H.A.—Dr. C. C. Slemons, Lansing

Meeting of West Virginia Public Health Association

THE recent Annual Meeting of the West Virginia Public Health Association, held jointly with the Public Health Officers' Conference, was in every way successful, with an attendance of 350–400 health workers from all fields.

The following officers were elected for 1935:

Dr. T. E. Cato, *President*—New Cumberland
Dr. A. J. Kemper, *First Vice-President*—Clarksburg
Dr. E. R. Davies, *Second Vice-President*—Kingwood
Dr. John Thames, *Secretary-Treasurer*, Charleston
Dr. John Thames, Representative on Governing Council, A.P.H.A., Charleston

Florida Public Health Meeting

THE sixth annual meeting of the Florida Public Health Association was held in Jacksonville, Fla., December 3–5, at the Mayflower Hotel.

The following officers were elected:

President—George N. MacDonnell, M.D., Miami
First Vice-President—N. A. Upchurch, M.D., Jacksonville
Second Vice-President—Johanna L. Sogaard, Jacksonville
Secretary-Treasurer—Stewart G. Thompson, D.P.H., Jacksonville

The program was of unusual interest and included important papers from many leading authorities from various states. The meeting was called to order by the President, Dr. J. R. McEachern, who is City Health Officer of Tampa.

Dr. McEachern's presidential address will appear in the January number of the *Florida Health Notes*. Some of the titles of papers presented were:

Pulmonary Spirochetosis; County Health Units; Early History of Vaccination Against Smallpox; Rural Health Service; Some Health Problems Regarding Parasitic Diseases Transmitted by Insects; Dengue in Miami; Significance of Dengue Epidemic; Food Inspection; Pellagra; Public Health Nursing; FERA Social Service and Public Health Program; Nursing Among Seminole Indians; Screw Worm Infestation in Florida; Progress in Sand Fly Control.

NATIONAL ACADEMY OF MEDICINE OF MEXICO ELECTS OFFICERS

THE newly appointed officers of the Academia Nacional de Medicina de Mexico are:

President, Francisco de P. Miranda, M.D.
Vice-President, Dr. Gustavo Baz
Permanent Secretary, Dr. Alfonso Pruneda
Annual Secretary, Miguel E. Bustamante, Dr.P.H.
Treasurer, Dr. Ramón Pardo

Dr. Miranda and Dr. Bustamante are members of the A.P.H.A.

CONFERENCE ON CHILDREN'S NEEDS

THE National Conference on the 1935 Needs of Children will be held under the auspices of *The Parents' Magazine*, January 3–4, at the Pennsylvania Hotel, New York.

Among the speakers will be Fiorello H. LaGuardia, Mayor of New York, on "Child Labor Must Go Forever"; Miss Grace Abbott, Retiring Chief, U. S. Children's Bureau, on "The Forgotten Child"; Aubrey Williams, Assistant Federal Relief Administrator, on "Children of the Unemployed"; Owen R. Lovejoy, Secretary of the Children's Aid Society of New York, on "Homeless Boys and Girls on the March."

AMERICAN STUDENT HEALTH ASSOCIATION MEETS

THE Fifteenth Annual Meeting of The American Student Health Association was held in New York December 27–28, in conjunction with The College Physical Education Association, The American Football Coaches' Association, and The National Collegiate Athletic Association.

INTERNATIONAL NURSING REVIEW DISCONTINUED

THE President of the International Council of Nurses, of Geneva, Switzerland, advises that with the issue of Volume IX of *The International Nursing Review*, dated 1934, further publication of that *Review* has been indefinitely suspended, pending the decision by the Board of Directors as to the further policy they propose to adopt with reference to the same. The question will come before the Board at their next meeting in 1935.

Subscriptions which have been received in advance will be held in suspense until the Board have arrived at a decision with regard to the future of this publication.

AMERICAN FOUNDATION FOR THE BLIND

THE cornerstone has been laid of the new home of the American Foundation for the Blind, at 15 West 16 St., New York.

Speakers at the ceremonies held on December 5 included: Dr. John H. Finley; Helen Keller; M. C. Migel, who gave the land and the 3-story building; and H. R. Latimer, of the Pennsylvania Association for the Blind of Pittsburgh.

Dr. Finley read a letter from President Roosevelt saying he was "very happy indeed to accept the honorary presidency of the American Foundation for the Blind." A telegram was also received from the President, too late to be read at the ceremony.

Into a copper box, placed within the cornerstone, were put autographed photographs of Miss Keller and Mrs. Anne Sullivan Macy her teacher, a talking book record of Mr. Migel's remarks, reports of the Foundation since its origin in 1923, copies of the publication, Outlook for the Blind, newspapers for Dec. 4 and 5, and several coins.

At a meeting which followed, Mr. Migel was reëlected president of the Foundation; Prudence Sherwin, vice-president; Dr. Burritt, secretary, and Mr. Ziegler, treasurer.

HOW DOCTORS HELP INDUSTRY

A MAN hiring into our shops is medically examined and given work that fits his condition. Disability does not necessarily bar him from a job. Twenty per cent of our present workmen are in the physically disabled class. Some are blind, some deformed, some not very strong—there are twelve thousand of them in all—and each man's work is selected to fit his case. Tuberculous men have sheltered places in the open air. By a system of medical transfers men's jobs may be changed at any time for health reasons.

Our doctors daily inspect all food served to the men and see that lunches are eaten under proper conditions. Even oil used in the machinery is treated with an antiseptic solution to prevent infection of hands or arms. When the bacteria count of the oil in a machine pit is high, the pit is drained, scalded with live steam, and thoroughly scrubbed. In some instances a protective ointment is provided which men rub on their hands and arms before commencing work. There are many such precautions. . . .— *How Doctors Help Industry,* Radio Talk, W. J. Cameron Ford, Sunday Evening Hour.

CHILD HEALTH CONFERENCES IN IOWA NEXT YEAR

AT the invitation of the University of Iowa, the Eighth Health Education Conference of the American Child Health Association will be held in Iowa City, June 19–22, 1935.

The Conference will be held in conjunction with the Ninth Annual Iowa Conference on Child Development and Parent Education, which is scheduled for June 17–19.

TERM OF BALTIMORE HEALTH COMMISSIONER EXTENDED

UNDER a recent amendment to the city charter, the term of the Health Commissioner of Baltimore is now 6 years instead of the previous 4-year appointment. It provides that Dr. Huntington Williams's term will expire October 1, 1938, instead of October 1, 1935. The change was a part of the charter revision program sponsored by Mayor Jackson, and will, he expects, take the position of health commissioner out of politics.

The amendment also makes it mandatory for a candidate for this office to have at least 5 years' actual experience in public health work performed by departments of federal, state or municipal governments.

BAD HOUSING

IT has been stated by N. H. Engle, of the U. S. Bureau of Foreign and Domestic Commerce, that—

> In 64 cities more than 600,000 homes had neither bathtub nor shower, and nearly 450,000 were without indoor water closets. These figures comprise 23 and 17 per cent respectively of all residential units surveyed.

In a recent statement, Clarence E. Pickett, of the Division of Subsistence Homesteads, U. S. Department of the Interior, said:

> While we have built the façade of abundant production higher and higher until its foundations became inadequate to sustain it, we have neglected consideration for the effect of bad housing . . . upon health and upon family life.

—*Public Housing Progress,* Nov. 15, 1934.

THE SLUM PROBLEM

ONE-THIRD of our countrymen are living in scattered hovels, in cluttered shacks, in the squalid flats of congested centers, with common toilets, with dark rooms on fetid shafts; we known from statistics that they are easy victims of chronic ailment and devastating disease, contributing to juvenile delinquency, to gang crime, to gang politics. Such is the slum problem.—*Public Housing Progress,* Nov. 15, 1934.

PERSONALS

HENRY R. O'BRIEN, M.D., A.P.H.A., of Oberlin, Ohio, formerly Health Commissioner of Lorain County, Ohio, has been appointed Assistant District Health Officer of the New York State Department of Health.

WILLIAM A. HOWE, M.D., member A.P.H.A., Chief of the Medical Inspection Bureau of the New York State Education Department, retired October 1, after being associated with the department since 1915.

PHILIP J. RAFLE, M.D., member A.P.H.A., of the New York State Department of Health at Albany, has been appointed temporary District Health Officer with headquarters in Syracuse to succeed the late Dr. Frederick W. Sears.

DR. JAMES A. FAULKNER, of Belleville, Ont., has been appointed Minister of Health for Ontario, Canada, succeeding Dr. John M. Robb, member A.P.H.A.

DR. STANLEY R. PARKINSON, of Marysville, Calif., succeeds Dr. James H. Barr as Health Officer of Yuba County.

DR. DENVER D. ROOS has been appointed Health Officer of Corona, Calif., following the retirement of Dr. William S. Davis.

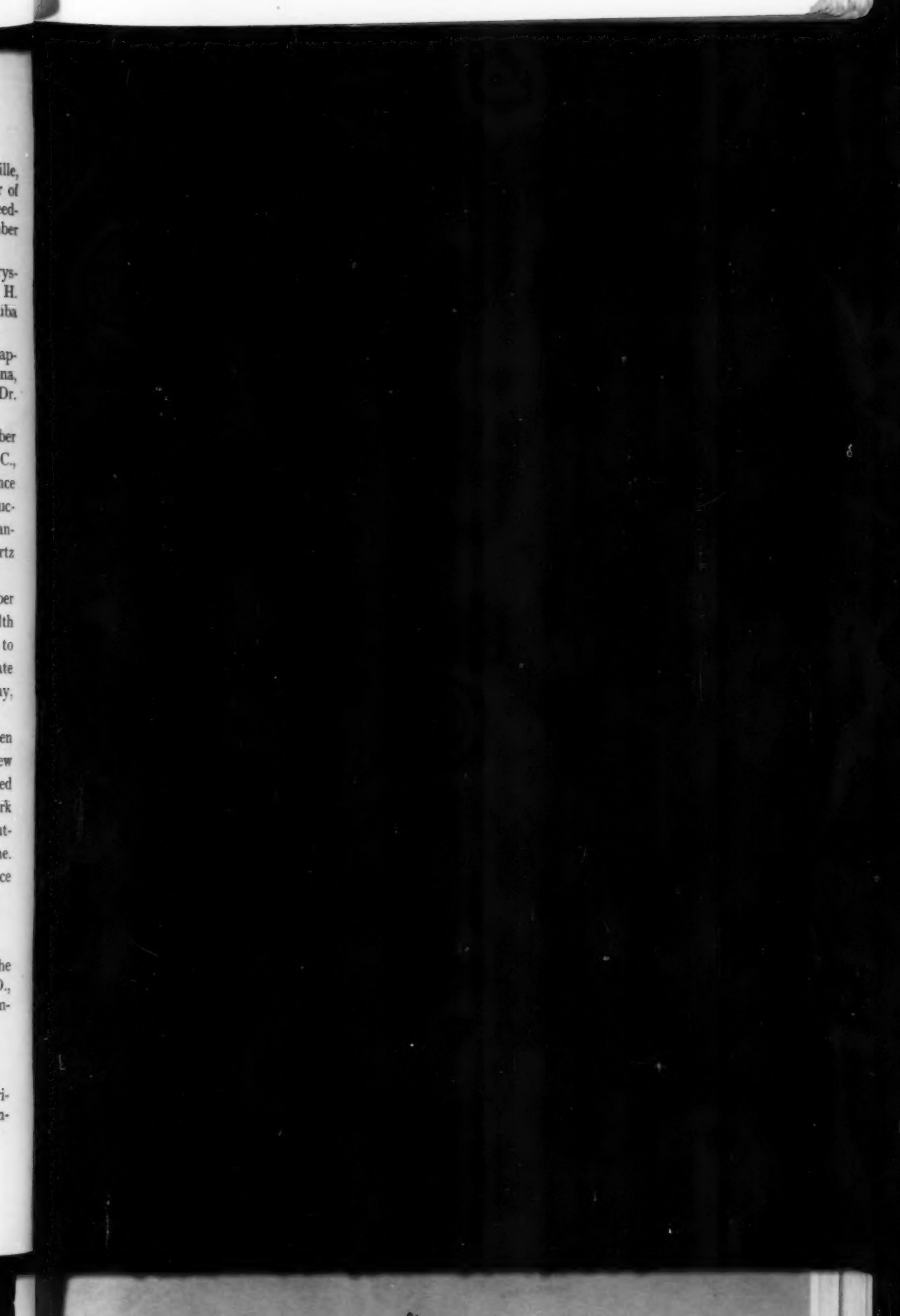
WILLIAM C. FOWLER, M.D., member A.P.H.A., of Washington, D. C., Health Officer of the District since 1918, retired as of Nov. 24. No successor to Dr. Fowler has been announced, but Dr. Edward J. Schwartz will be acting Health Officer.

ERNEST L. STEBBINS, M.D., member A.P.H.A., has resigned as Health Officer of Henrico County, Va., to join the staff of the New York State Department of Health, at Albany, N. Y.

DR. CHARLES NORRIS, who has been Chief Medical Examiner of New York City since 1918, was presented with a gold medal by the New York Academy of Medicine for his outstanding work in forensic medicine. Dr. Norris entered the city's service in 1904.

DEATH

NOTICE has been received of the death of Lemar M. Andrews, M.D., Health Officer of Warsaw, N. Y., member A.P.H.A.

CONFERENCES

Mar. 27–29, Canadian Section, American Water Works Association, London, Ont., Canada.